



TRUSCON

Building Products of Steel



TRUSCON STEEL COMPANY

Products and Services

PRODUCTS

THE TRUSCON STEEL COMPANY, of Youngstown, Ohio, is an institution of international scope—the largest company of its kind in the world, manufacturing a complete line of steel building products.

They have been developed in accord with modern architectural requirements for utility and quality, and include individual units peculiarly suited to all types of building and every structural condition.

Due to unusually efficient manufacturing facilities, the profession is assured of dependable workmanship. This, in turn, is supplemented by a nation-wide engineering organization equipped to render direct personal service in the designing room or the field. Our location of offices and warehouses guarantees speedy attention to inquiries.

The TRUSCON STEEL COMPANY of 1938 represents over "Thirty-five Years of Pioneering and Leadership" and the following noteworthy line of nationally known building and maintenance products:

Windows of Steel; Steel Doors and Frames; Reinforcing Steel; "O.T." Steel Joists, Clerespans Joists; Welded Steel Fabric; Metal Lath and Insulmesh for Plaster Bases; Ferroclad Insulation Panels; Steeldeck and Ferrocoustic Roofs; Structural Steel; Unigrid and Tee-grid Bridge Floors; Gratings; Safety Tread Steel; Rolled and Formed Sections; Power Transmission Structures; Steel Poles and Towers; Radio Antennae; "Silentaire," a Window Ventilator and Muffler; and varied Industrial Maintenance Products.

ARCHITECTURAL SERVICE

Truscon's designers and engineers work in close relationship with architects, builders and contractors in the interest of a better understanding of all requirements. Architects are

invited to call on our Engineering and Sales Department for preliminary estimates, for investigations, studied reports, complete suggestions and definite quotations.

Window and Door Service

Truscon Window and Door Service knows no bias in its recommendations, for Truscon can furnish any type or kind of window or door. And with Truscon's intimate knowledge of latest de-

velopments, relative costs, advantages and limitations of standardization and quantity production, it can work efficiently towards its objective—the best interests of the architect and the owner.

Erection and Adjusting

The satisfactory operation of a window or door installation is in a large degree dependent upon the manner in which it is installed and adjusted. Realizing this fact, the TRUSCON STEEL COMPANY has built up a national organization of experts familiar with our windows and doors in every detail and ready to take the full responsibility of erecting and adjusting our windows and doors to the satisfaction of the architect, the general contractor and the owner.

Most architects and contractors realize the value of Truscon Erection and specify and award all

contracts erected and adjusted. This window and door service means that the TRUSCON STEEL COMPANY and its field organizations take full responsibility for the installation from the start of manufacture up to and including its incorporation in the finished structure.

We look after shipment; unloading at destination; cartage and storage at the job; hoisting and distributing on the various floors; setting, plumbing and fastening in the opening; applying of hardware and the final inspection and adjusting of windows and doors after painting.

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO

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TYPES OF TRUSCON WINDOWS AND DOORS

Truscon steel windows and doors cover a wide range of building requirements and at the same time meet every condition of architectural harmony, simplicity, fine quality and superior craftsmanship demanded by the industry. Truscon offers the following types:

STEEL WINDOWS

Double-Hung Windows, Series 27-28-33—In types and sizes to meet architectural requirements.

Donovan Awning Type Windows, Series 38—Prevent sun glare and drafts; ideal for schools and hospitals.

Residence Casements, Series 5—A complete line for residence and apartment construction, with or without screen arrangements, including wood surrounds and Tempyrite insulating windows.

Intermediate and Heavy Casements, Series 15, 15c and 25—For public and private monumental buildings.

Monumental Projected Windows, Series 15p—For quality installations in schools, offices, etc.

Detention Windows—For prisons, reformatories and psychopathic hospitals.

Architectural and Commercial Projected Windows—A practical window with many applications.

Continuous Windows and Mechanical Operators.

Utility and Basement Windows.

Coal Chutes and Steel Lintels.

Pivoted Windows—For Industrial and Commercial Buildings.

Screens, Sub-Frames and Stools—For all types of windows.

STEEL DOORS

Industrial Doors—For large and small openings.

Overdoors—Operating overhead.

Accordion Doors—Leaves fold against each other like a jack-knife.

Vertical Lift Doors.

Canopy Doors and Bifold Doors.

Airplane Hangar Doors—In various styles, straight track types, curved track types, canopy, telescoping, projected and original "Kanopy" types.

Pier Doors—A vertical lift-swing type.

DOUBLE HUNG WINDOWS

SERIES 27 AND 28

TRUSCON Series 27 and 28, plate type, Double-Hung Windows are galvanized and bronze weather stripped and meet U. S. Government specifications for salt spray test and air infiltration.

SPECIFICATIONS

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be the solid steel, plate type (galvanized and weather stripped) double-hung windows as manufactured by Truscon Steel Company of Youngstown, Ohio. No substitution shall be made without the written approval of the architect. (Specify herein whether Series 27 or 28 is required.)

2 Scope of Work—The steel window manufacturer shall include in his work all Double-Hung Steel Windows erected complete, and shall furnish and apply hardware and weights and make a final adjustment of these windows.

3 Material—All windows throughout shall be constructed of Truscon special hot-rolled new billet steel, galvanized. The gauges of the various sections will be as shown in table:

	Series 27	Series 28
Sill	14 gauge	12 gauge
Weight box	18 gauge	16 gauge
Cover plates and parting strip.....	16 gauge	16 gauge
Staff head	12 gauge	12 gauge
Head and head covers.....	16 gauge	16 gauge
Rails and stiles of sash.....	14 gauge	12 gauge
Glazing Strips—Jambs and Meeting Rail	14 gauge	14 gauge
Glazing Strips—Top and Bottom Rail	14 gauge	12 gauge

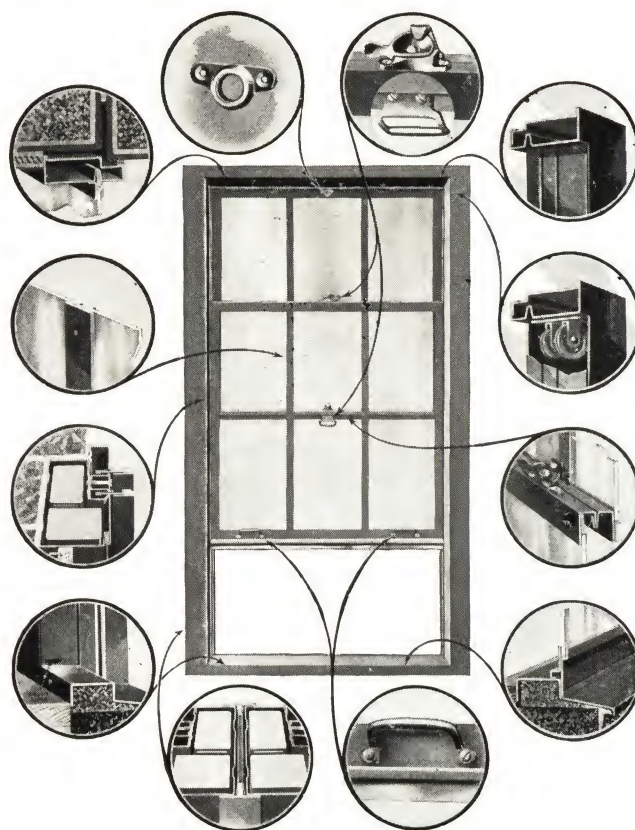
4 Construction—(a) *Frame Members*: head, sill and jamb construction, each one piece of metal exclusive of parting strip, weight box cover and head cover; all members formed straight and true with welded joints ground smooth; staff head formed on exterior of frame.

(b) *Pulley Stiles* shall be formed with deep weathering and the pulley stile and weight box cover held in place with one line of oval head screws passing through a heavy reinforcing piece on inside of jamb. Adjustment of sash and frame shall be secured by these screws which hold the parting strip and weight box cover. The weight box cover shall run the full height of the jamb from sill to head, and shall be removable.

(c) A *Brass Check Plate* shall be attached at meeting rails to insure proper weathering.

(d) *Sash Members* shall be so designed that the distance from masonry opening to glass line at jambs and head will be $2\frac{1}{2}$ in.

(e) *Glazing Strips* shall be secured with oval head screws to permit inside glazing.



5 Weather Stripping—Weather stripping shall be provided of spring bronze and applied to sash members at sill, jambs, meeting rails and head. A spring bronze closure shall be applied to lower half of outer sashway.

6 Hardware—(a) *Frames* shall be equipped with pressed steel pulleys, bronze bushed and pressed steel housings with hard steel pulley axles. Sash shall be hung on zinc coated steel sash chains, having a tensile strength of at least 600 pounds, concealed behind pulley stiles and properly balanced with cast iron weights.

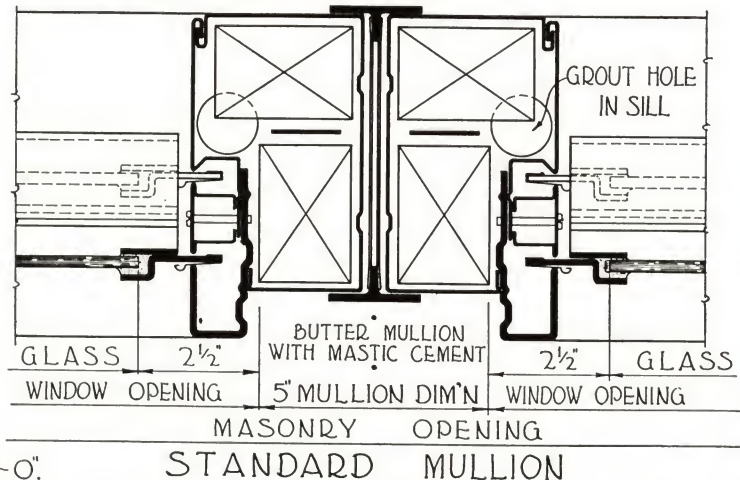
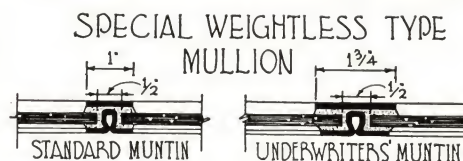
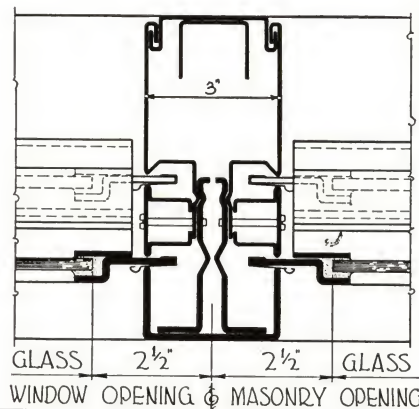
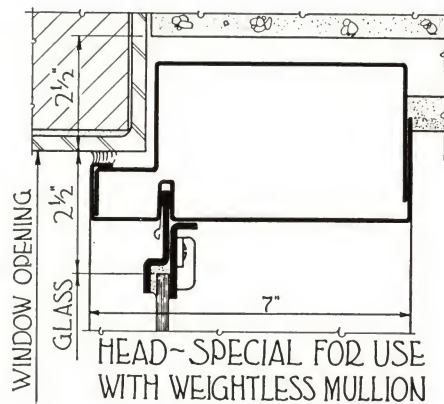
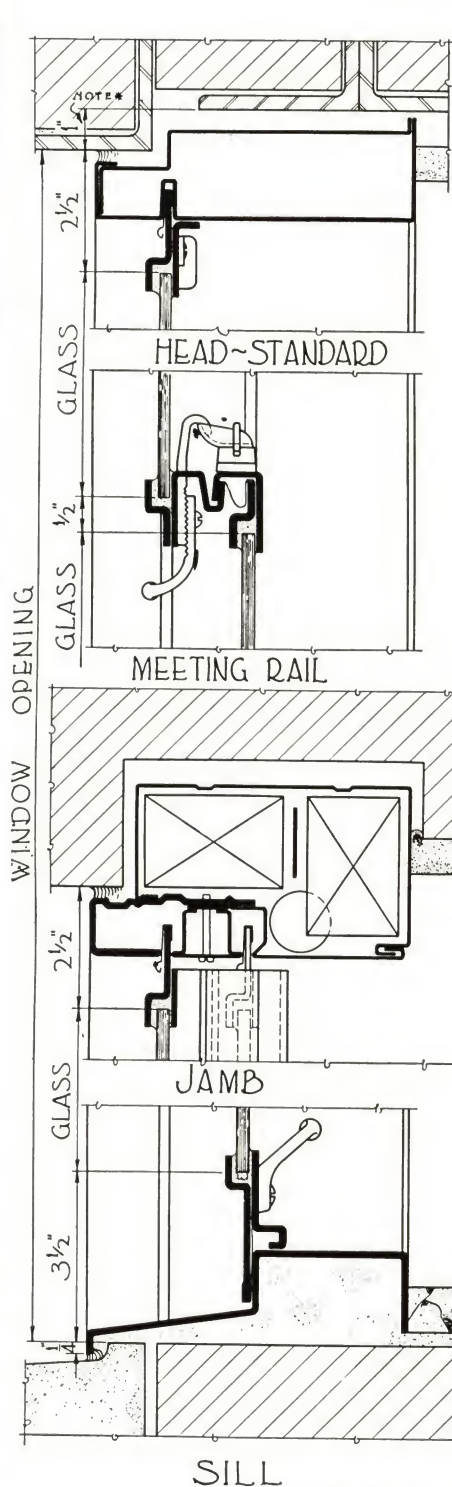
(b) *Sash* shall be equipped with one pair of lift handles, one combination adjustable sweep lock, one pull-down handle and one pole socket for upper sash, all of solid bronze.

(Cadmium plated malleable iron hardware can be substituted at slight reduction in price.)

7 Painting—All windows shall be given one coat of protective paint after assembly and before shipment.

8 Air Infiltration—On double-hung windows shall be guaranteed not to exceed 1.00 cubic foot per foot of sash perimeter per minute when subjected to a static air pressure equivalent to the pressure exerted by wind at a velocity of 25 miles per hour.

9 Galvanizing—Galvanized materials shall show no rust after 50 hours continuous exposure at a temperature of 90 to 95 degrees Fahr. to the spray of 20 per cent salt (sodium chloride) solution.



	WINDOW		OPENING		WIDTH		HEIGHT	
5'-0"	30-90	36-90	40-90	46-90	50-90	3'-0"	4'-0"	5'-0"
6'-0"	30-86	36-86	40-86	46-86	50-86	3'-6"	4'-6"	5'-6"
8'-5"	30-80	36-80	40-80	46-80	50-80	4'-0"	5'-0"	6'-0"
6'-6"	30-76	36-76	40-76	46-76	50-76	4'-6"	5'-6"	6'-6"
7'-6"	30-70	36-70	40-70	46-70	50-70	5'-0"	6'-0"	7'-0"
7'-0"	30-66	36-66	40-66	46-66	50-66	5'-6"	6'-6"	7'-6"
6'-6"	30-60	36-60	40-60	46-60	50-60	6'-0"	7'-0"	8'-0"
5'-6"	30-56	36-56	40-56	46-56	50-56	6'-6"	7'-6"	8'-6"
5'-0"	30-50	36-50	40-50	46-50	50-50	7'-0"	8'-0"	9'-0"
4'-6"	30-46	36-46	40-46	46-46	50-46	7'-6"	8'-6"	9'-6"
3'-0"	30-40	36-40	40-40	46-40	50-40	8'-0"	9'-0"	10'-0"
3'-6"	30-36	36-36	40-36	46-36	50-36	8'-6"	9'-6"	10'-6"
3'-0"	30-30	36-30	40-30	46-30	50-30	9'-0"	10'-0"	11'-0"
2'-6"	30-26	36-26	40-26	46-26	50-26	9'-6"	10'-6"	11'-6"
2'-0"	30-20	36-20	40-20	46-20	50-20	10'-0"	11'-0"	12'-0"
1'-6"	30-16	36-16	40-16	46-16	50-16	10'-6"	11'-6"	12'-6"
1'-0"	30-10	36-10	40-10	46-10	50-10	11'-0"	12'-0"	13'-0"
6'-0"	30-10	36-10	40-10	46-10	50-10	11'-6"	12'-6"	13'-6"
5'-0"	30-06	36-06	40-06	46-06	50-06	12'-0"	13'-0"	14'-0"
4'-6"	30-02	36-02	40-02	46-02	50-02	12'-6"	13'-6"	14'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	13'-0"	14'-0"	15'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	13'-6"	14'-6"	15'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	14'-0"	15'-0"	16'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	14'-6"	15'-6"	16'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	15'-0"	16'-0"	17'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	15'-6"	16'-6"	17'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	16'-0"	17'-0"	18'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	16'-6"	17'-6"	18'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	17'-0"	18'-0"	19'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	17'-6"	18'-6"	19'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	18'-0"	19'-0"	20'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	18'-6"	19'-6"	20'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	19'-0"	20'-0"	21'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	19'-6"	20'-6"	21'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	20'-0"	21'-0"	22'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	20'-6"	21'-6"	22'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	21'-0"	22'-0"	23'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	21'-6"	22'-6"	23'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	22'-0"	23'-0"	24'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	22'-6"	23'-6"	24'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	23'-0"	24'-0"	25'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	23'-6"	24'-6"	25'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	24'-0"	25'-0"	26'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	24'-6"	25'-6"	26'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	25'-0"	26'-0"	27'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	25'-6"	26'-6"	27'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	26'-0"	27'-0"	28'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	26'-6"	27'-6"	28'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	27'-0"	28'-0"	29'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	27'-6"	28'-6"	29'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	28'-0"	29'-0"	30'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	28'-6"	29'-6"	30'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	29'-0"	30'-0"	31'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	29'-6"	30'-6"	31'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	30'-0"	31'-0"	32'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	30'-6"	31'-6"	32'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	31'-0"	32'-0"	33'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	31'-6"	32'-6"	33'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	32'-0"	33'-0"	34'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	32'-6"	33'-6"	34'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	33'-0"	34'-0"	35'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	33'-6"	34'-6"	35'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	34'-0"	35'-0"	36'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	34'-6"	35'-6"	36'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	35'-0"	36'-0"	37'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	35'-6"	36'-6"	37'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	36'-0"	37'-0"	38'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	36'-6"	37'-6"	38'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	37'-0"	38'-0"	39'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	37'-6"	38'-6"	39'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	38'-0"	39'-0"	40'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	38'-6"	39'-6"	40'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	39'-0"	40'-0"	41'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	39'-6"	40'-6"	41'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	40'-0"	41'-0"	42'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	40'-6"	41'-6"	42'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	41'-0"	42'-0"	43'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	41'-6"	42'-6"	43'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	42'-0"	43'-0"	44'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	42'-6"	43'-6"	44'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	43'-0"	44'-0"	45'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	43'-6"	44'-6"	45'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	44'-0"	45'-0"	46'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	44'-6"	45'-6"	46'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	45'-0"	46'-0"	47'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	45'-6"	46'-6"	47'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	46'-0"	47'-0"	48'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	46'-6"	47'-6"	48'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	47'-0"	48'-0"	49'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	47'-6"	48'-6"	49'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	48'-0"	49'-0"	50'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	48'-6"	49'-6"	50'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	49'-0"	50'-0"	51'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	49'-6"	50'-6"	51'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	50'-0"	51'-0"	52'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	50'-6"	51'-6"	52'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	51'-0"	52'-0"	53'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	51'-6"	52'-6"	53'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	52'-0"	53'-0"	54'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	52'-6"	53'-6"	54'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	53'-0"	54'-0"	55'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	53'-6"	54'-6"	55'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	54'-0"	55'-0"	56'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	54'-6"	55'-6"	56'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	55'-0"	56'-0"	57'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	55'-6"	56'-6"	57'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	56'-0"	57'-0"	58'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	56'-6"	57'-6"	58'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	57'-0"	58'-0"	59'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	57'-6"	58'-6"	59'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	58'-0"	59'-0"	60'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	58'-6"	59'-6"	60'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	59'-0"	60'-0"	61'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	59'-6"	60'-6"	61'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	60'-0"	61'-0"	62'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	60'-6"	61'-6"	62'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	61'-0"	62'-0"	63'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	61'-6"	62'-6"	63'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	62'-0"	63'-0"	64'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	62'-6"	63'-6"	64'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	63'-0"	64'-0"	65'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	63'-6"	64'-6"	65'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	64'-0"	65'-0"	66'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	64'-6"	65'-6"	66'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	65'-0"	66'-0"	67'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	65'-6"	66'-6"	67'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	66'-0"	67'-0"	68'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	66'-6"	67'-6"	68'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	67'-0"	68'-0"	69'-0"
4'-6"	30-00	36-00	40-00	46-00	50-00	67'-6"	68'-6"	69'-6"
4'-0"	30-00	36-00	40-00	46-00	50-00	68'-0"	69'-0"	70'-0"
3'-6"	30-00	36-00	40-00	46-00	50-00	68'-6"	69'-6"	70'-6"
3'-0"	30-00	36-00	40-00	46-00	50-00	69'-0"	70'-0"	71'-0"
2'-6"	30-00	36-00	40-00	46-00	50-00	69'-6"	70'-6"	71'-6"
2'-0"	30-00	36-00	40-00	46-00	50-00	70'-0"	71'-0"	72'-0"
1'-6"	30-00	36-00	40-00	46-00	50-00	70'-6"	71'-6"	72'-6"
1'-0"	30-00	36-00	40-00	46-00	50-00	71'-0"	72'-0"	73'-0"
6'-0"	30-00	36-00	40-00	46-00	50-00	71'-6"	72'-6"	73'-6"
5'-0"	30-00	36-00	40-00	46-00	50-00	72'-0"	73'-0"	74'-0"

STANDARD TYPES

NOTE: WIDTH OF GLASS IN SINGLE
LIGHT PLUS 5" GIVES MASONRY
OPENING WIDTH.

HEIGHT OF GLASS SUM OF
UPPER & LOWER SASH SINGLE LIGHT
PLUS 6½" GIVES MASONRY OPENING
HEIGHT.

VERTICAL & HORIZONTAL MUNTIN
BARS MAY BE USED BUT OVERALL
DIMENSION MUST BE MAINTAINED.
DEDUCT $\frac{1}{2}$ " FROM GLASS SIZE
FOR EACH MUNTIN BAR.

* WHEN WEIGHTLESS TYPE MULLIONS ARE USED THE CLEARANCE FOR THE HEAD SECTION IS $2\frac{1}{2}$ " IN PLACE OF 1' REQUIRED FOR STANDARD.

PLACE UNIT REQUIRED FOR STANDARD.

SCALE 3" = 1'-0".

STANDARD MULLION

TRUSCON
STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES — STANDARD DETAILS

DOUBLE-HUNG STEEL WINDOWS

SERIES Nos. 27 and 28

PLATE No.
W-11
OCTOBER, 1937

Peerless DOUBLE-HUNG WINDOWS SERIES 33

THE Peerless Double-Hung Steel Window, Series 33, combines a pleasing architectural design with maximum utility, durability, simplicity and economy. The tubular construction of the sash, frame members and combination jamb and weight well develops remarkable strength in the sections and at the same time imparts a proportion to them that makes the window thoroughly in harmony with requirements for monumental buildings.

SPECIFICATIONS

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be the Peerless Double-Hung Steel Windows, Series 33 (galvanized and weatherstripped) as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Scope of Work—The steel window manufacturer shall include in his work all Double-Hung Steel Windows, erected complete, and shall furnish and apply hardware and weights and make a final adjustment of these windows.

3 Material—All windows throughout shall be constructed of Truscon special hot-rolled, new billet steel, copper-bearing and galvanized.

Gauges of the various sections will be as shown in table:

Sill	14 gauge
Weight box	18 gauge
Cover plates and parting strip	18 gauge
Head	16 gauge
Head cover	24 gauge
Rails and stiles of sash	18 gauge
Inside glazing strips	13 gauge

4 Construction—(a) *Frame Members*: The head frame shall be made up of two parts—the frame proper and the cover. The jamb frame and the weight box shall be made of one piece and shall have attached to it the jamb stop which shall also serve as an access panel to the weights. All members formed straight and true with welded joints.

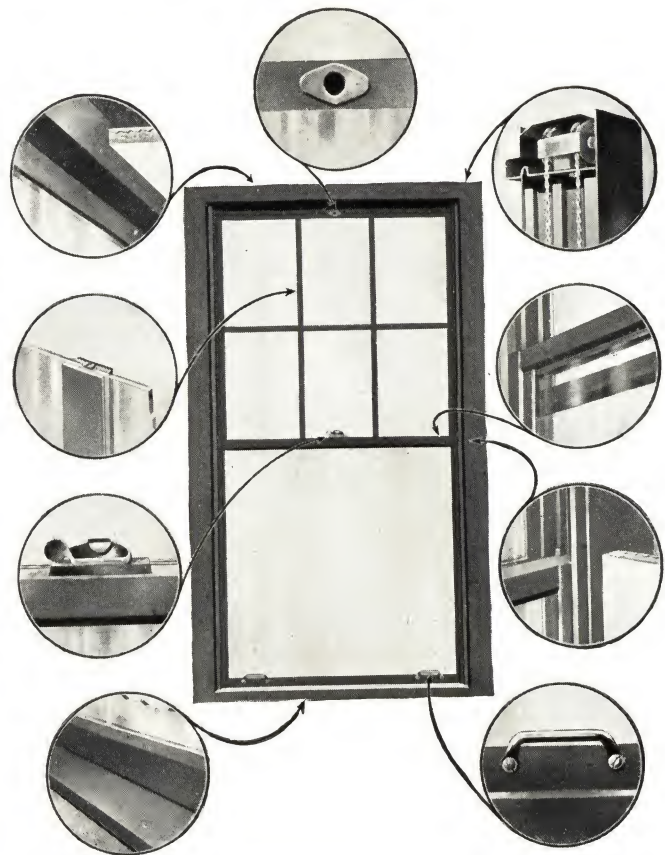
(b) The *Jamb Stop* shall be removable to afford an exceptionally large opening for access to weights.

(c) *Sash Members*: Sash members shall be not less than $1\frac{1}{8}$ in. deep, front to back, and shall be so designed that the distance from masonry opening to glass lines at head will be $2\frac{5}{8}$ in. and at jambs $2\frac{1}{8}$ in. Corners of sash shall be welded.

(d) The *Meeting Rail* between upper and lower sash shall be formed so as to interlock.

(e) Where *Muntin Bars* are required, they shall butt against sash members and be so welded that wherever possible a flush surface is secured at intersections. A smooth outside and inside surface shall be maintained on all muntin bars.

(f) Convenient *Inside Glazing* shall be assured by the use of removable inside glazing strips at sides only. These glazing strips shall be secured with oval-head screws.



5 Weather Stripping—Weather stripping shall be provided of spring bronze and applied to sash members at sill, jambs, meeting rail and head.

6 Hardware—(a) Frames shall be equipped with grey iron pulleys having hard white maple bearings saturated in paraffin under steam pressure and running on $\frac{5}{16}$ -in. round, cold-rolled axles mounted in pressed steel housings. Sash shall be hung on zinc coated steel sash chain, having a tensile strength of at least 600 pounds, exposed and properly balanced with cast iron weights.

(b) Sash shall be equipped with one pair of solid bronze lift handles, solid bronze sweep lock, cadmium plated steel sweep lock strike, and one cadmium plated steel pole socket.

(Cadmium plated malleable iron hardware can be substituted at slight reduction in price.)

7 Painting—All windows shall be given one coat of protective paint after assembly and before shipment.

8 Air Infiltration—On double-hung windows shall be guaranteed not to exceed 1.00 cubic foot per foot of sash perimeter per minute when subjected to a static air pressure equivalent to the pressure exerted by wind at a velocity of 25 miles per hour.

9 Galvanizing—Galvanized materials shall show no rust after 50 hours continuous exposure at a temperature of 90 to 95 degrees Fahr. to the spray of 20 per cent salt (sodium chloride) solution.

GENERAL INFORMATION, DOUBLE HUNG WINDOWS

Series 27 • • 28 • • 33

FRAMES are made in one unit and are solidly welded at corners, insuring alignment and ease of operation. Because they are completely fabricated in the factory, field labor is small, and the actual ultimate price compares favorably with that of windows of inferior materials.

Weightless mullions, as detailed on pages 5 and 7, give narrow sight lines as required in certain architectural designs. In this construction the separate windows are built as an integral unit and all weights are carried at the opening jambs and there are no weights carried in the mullion.

Standard mullions are made of structural "Tees" and straps, and are used to join individual units in the field.

Muntin bars can be furnished in accord with individual specifications.

WINDOW UNITS WITH TRANSOMS

Transoms are incorporated in the main frame of the standard size Double-Hung Window. They are not a separate unit. All hardware is of standard design and finish.

COUNTERBALANCED WINDOWS

Counterbalanced windows are of the same design as standard Windows, except that counterweights are omitted and the sash counterbalance each other.

SEGMENTAL OR CURVED HEAD UNITS

Segmental or Curved Head Units can be provided in almost any radii or design. The inside of this window is finished square to facilitate the use of shades and draperies.

ERECTION AND ADJUSTMENT

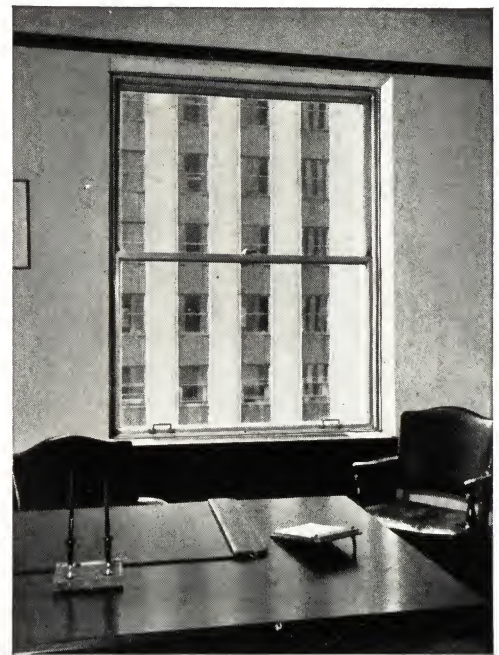
Most architects and contractors realize the value of Truscon Erection and specify and award all contracts for double-hung windows erected and adjusted. This service means that Truscon takes full responsibility for the windows from the start of manufacture up to and including their incorporation in the finished structure.

UNDERWRITERS' WINDOWS

All Truscon Standard Double-Hung Steel Windows meet Underwriters' specifications except for limiting unit sizes and glass sizes, and for wide glazing strips which are not required for ordinary use.

Underwriters' prescribed limits are:

1. Units without Transoms are limited to 6 ft. 0 in. in width and 10 ft. 0 in. in height and to 60 sq. ft. in area.
2. Units with Transoms are limited to 6 ft. 0 in. in width and 12 ft. 0 in. in height, including Transom height, and to 60 sq. ft. in area. Transoms in such units limited to 3 ft. 0 in. in height.
3. Multiple unit openings consisting of single units



conforming to limits shown in paragraphs 1 and 2 and Vertical Mullions are not limited in width.

4. Twin Windows (Weightless Mullion types) without Transoms are limited to 10 ft. 0 in. in width and 10 ft. 0 in. in height and to 100 sq. ft. in area.
5. Twin Windows (Weightless Mullion types) with Transoms are limited to 10 ft. 0 in. in width and 12 ft. 0 in. in height, including Transom Height, and to 100 sq. ft. in area. Transoms in such units are limited to 3 ft. 0 in. in height.
6. Glass sizes for Series 27 and 28 individual lights are limited to 48 in. in width and 54 in. in height and to 720 sq. in. exposed glass area.
7. Glass sizes for Series 33 individual lights are limited to 48 in. in width and 54 in. in height and to 505 sq. in. exposed glass area.



DONOVAN AWNING TYPE WINDOWS

SERIES 38

DAYLIGHT illumination without sun glare, and natural ventilation without draughts are provided for schools, hospitals, offices, and public buildings by Donovan Awning Type Windows. They are made of high quality steel and are superior in design, construction, workmanship and operation. Their moderate cost makes them practical for any building.

SPECIFICATIONS

General—All windows so indicated on the plans and elevations and called for in these specifications shall be Series 38 Donovan Awning Type steel windows as manufactured by the Truscon Steel Company of Youngstown, Ohio. No substitutions shall be made without the written approval of the architect.

2 Material—

(a) All members shall be constructed from Truscon specification hot rolled new billet steel designed particularly for the construction of this window. Weathering projections shall be rolled integral with the sections to provide overlapping, parallel surface contacts of not less than $\frac{1}{4}$ in. at both outside and inside points of closure. Movable sash shall make both outside and inside contacts against one-piece hot rolled section at head, jambs and sill.

(b) The combined weight of frame and ventilator sections at head and jamb shall be not less than 5.3 lbs. per linear foot and at sill not less than 4.15 lbs. All outside frame sections shall be not less than $1\frac{1}{8}$ in. in depth and ventilator rails not less than $1\frac{1}{2}$ in.

3 Operation—

(a) The lower ventilator shall be the manual of operation controlling the opening and closing of the upper ventilators.

(b) The construction of the component parts shall be such that all ventilators shall open and close simultaneously and be so arranged that the upper ventilator or ventilators may be left open while the bottom ventilator is closed, or the bottom ventilator open with the upper ventilators closed.

(c) The ventilators in each window shall be connected by a $\frac{5}{8}$ in. x $\frac{1}{8}$ in. steel bar concealed, when window is closed, in jamb frame. Each ventilator to have sliding friction pivot shoes at top corners traveling in the frame section and fixed to connecting bars by engaging pins. Lower or sill ventilator to be equipped with a concealed clutch releasing mechanism in top rail for the purpose of disengaging the pivot pins from connecting bars to allow lower ventilator to be closed while upper ventilators are left open or upper ventilators closed and sill ventilator open. The engaging of sill ventilator pivot pins with connecting bars to be automatic.

(d) All ventilators shall swing out at bottom. Ventilators shall be hung by bronze guide shoes sliding in jamb frame and shall be joined to connecting bars by hard steel pins supported by bronze brackets at top corners of each ventilator. Guide shoes to serve as friction pivots to hold ventilators firmly in any open position. Ventilators supported at each jamb by steel swing arms, all concealed in frame when ventilators are closed.

4 Construction—

(a) Corners of frame and ventilators shall be mitered and electrically butt welded or mortise and tenoned air hammer riveted and electrically welded. All welds shall be ground smooth on outside exposed surfaces. Outside frame section shall be of an unequal channel shape with the long leg extending $\frac{3}{4}$ in. beyond window dimension as continuous anchor flange.

(b) Muntins as shown shall be a specially designed "T" bar section and shall be continuous between ventilator rails. At intersections there shall be a mechanical joint rigidly interlocking the muntins FLUSH with each other. Intersection of muntins with ventilator rails shall be mortised, tenoned and air hammer riveted.

(c) All ventilators shall be supported on high carbon steel swing arms of not less than 1 in. x $\frac{1}{8}$ in. in size. Both ends attached by double riveted brackets. Top end of supporting arms for upper ventilators shall have pivot point located beyond the outside face of side rails to obtain efficient leverage to hold the ventilators closed tightly with minimum tension on bottom ventilator. The pivot bracket shall completely house the end of the supporting arm which projects through the ventilator side rails on the outside. Pivot pins in ends of arms to be not less than $\frac{3}{8}$ in. diameter steel, working in bronze flanged bushings.

5 Hardware—

(a) The bottom ventilator shall be equipped with water rolled specification solid bronze cam locking handle fitted to the lower rail and a clutch at the center of the upper rail. Base of cam handle to be so designed to dowel with strike to prevent side motion of ventilator. (Polished bronze furnished at slight extra if required.)

(b) Each ventilator in the window shall be equipped with water rolled solid bronze shade brackets and cord rollers. Shade brackets shall be attached at the lower corners of each ventilator and the cord rollers at the center of the upper rail.

(c) Shade guides shall be furnished as required (slight added cost).

6 Mechanical Operators—

(Include only when required.)—

Mechanical Operators shall be provided to operate all ventilators simultaneously in single or multiple window openings. The clutch releasing mechanism shall be omitted.

(a) Operating mechanism to consist of teeth cut in lower ends of $\frac{5}{8}$ in. x $\frac{1}{8}$ in. steel bars, pinion gears, $\frac{1}{8}$ in. cold rolled horizontal shaft and worm gear power unit.

(b) A specially constructed hollow sill made of 12 gauge material shall fully conceal all parts of the mechanical operators. Removable cover plate to be provided to permit access to all working parts.

(c) All openings with sill 6 ft. 0 in. or less from floor shall be provided with a removable crank handle.

(d) All openings with sill more than 6 ft. 0 in. from floor shall have (choice of) (1) concealed vertical shaft and miter gear units concealed in chase in wall (2) chain wheels, chain guard and endless chain extending to within easy reach of floor.

7 Shop Painting—

(a) All window units shall be given a coat of protective rust resisting gray paint baked on at a temperature of 300° for a duration of one hour.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

8 Erection—

Window units shall be trued in all directions and set plumb in the masonry.

In setting windows, wedges to hold unit in place must be located so as not to cause bulging or distortion.

After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

The erection of the windows shall be performed by the manufacturer of same.

9 Glazing—

(To be done by glazing contractor.)—

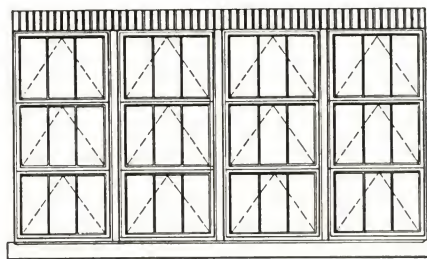
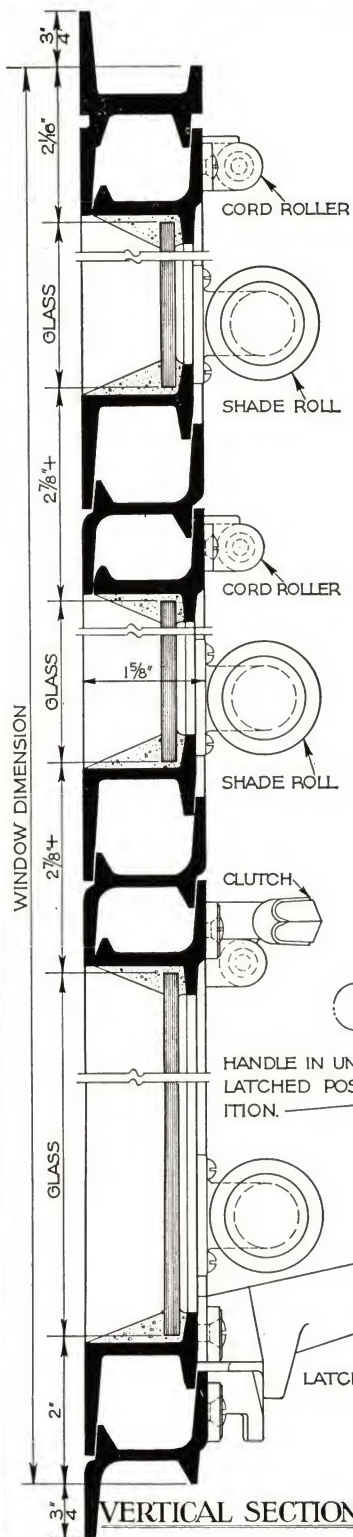
Architect to specify either one of the following methods of glazing:

Specifications for Spring Clip Glazing:

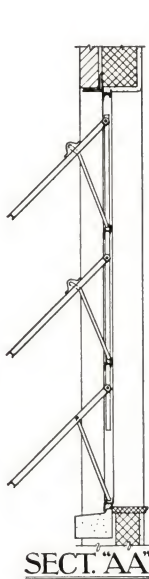
All windows shall be glazed on the OUTSIDE. Glass shall be bed and face puttied and held in place by Truscon copper clad wire glazing clips.

Specifications for Bead Glazing:

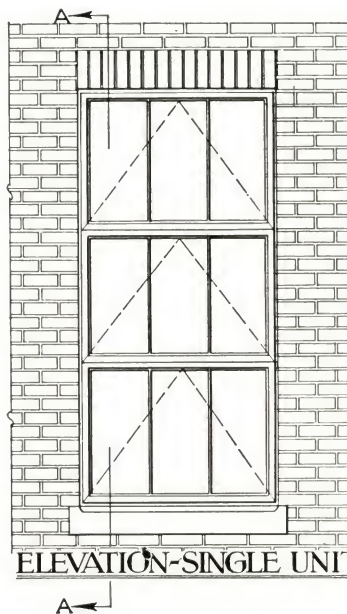
All windows shall be glazed on the INSIDE. Glass shall be bedded in steel window putty and held in place with continuous glazing beads attached to the window with brass screws.



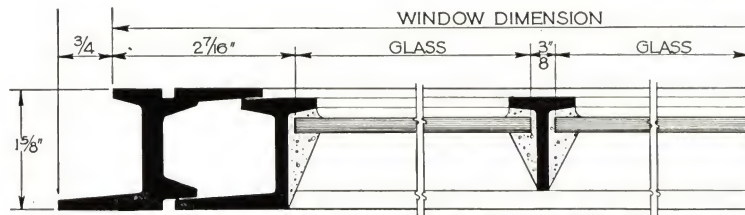
TYPICAL ELEVATION



SECT. "AA"

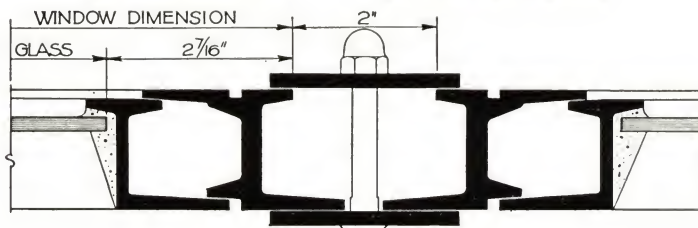


ELEVATION-SINGLE UNIT



SECT. AT JAMB

TYPICAL MUNTIN



SECTION THRU MULLION

TYPES & SIZES

WIDTHS	
WINDOW	GLASS
2'-6"	12 $\frac{3}{8}$ "
2'-9"	13 $\frac{7}{8}$ "
3'-0"	15 $\frac{3}{8}$ "

HEIGHTS		
WINDOW	GLASS	
5'-0"	26½"	
5'-6"	29½"	
6'-0"	32½"	
6'-6"	35½"	

	7'-5½"	26½"	
"C"	8'-2½"	29½"	
	8'-11½"	32½"	

"E"	7'-5½"	26½"	
	8'-2½"	29½"	
	8'-11½"	32½"	

WIDTHS	
WINDOW	GLASS
3'-3"	11 ¹ / ₈ "
3'-6"	12 ¹ / ₈ "
3'-9"	13 ¹ / ₈ "
4'-0"	14 ¹ / ₈ "
4'-3"	15 ¹ / ₈ "
4'-6"	16 ¹ / ₈ "

HEIGHTS		
WINDOW	GLASS	
5'-0"	26½"	
"B" 5'-6"	29½"	
6'-0"	32½"	
6'-6"	35½"	

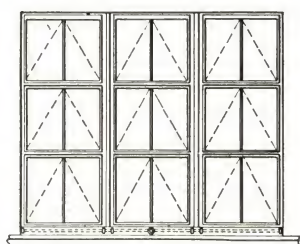
	7'-5½"	26½"	
"D"	8'-2½"	29½"	
	8'-11½"	32½"	

"F"	7'-5½"	26½"	
	8'-2½"	29½"	
	8'-11½"	32½"	

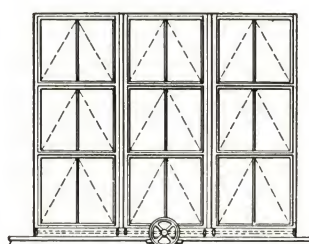
TRUSCON
STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES — STANDARD DETAILS
DONOVAN AWNING TYPE STEEL WINDOWS
SERIES 38

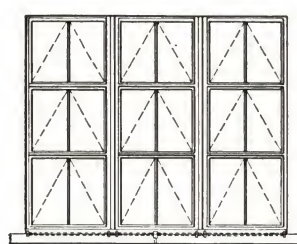
PLATE No.
P-9
OCTOBER, 1937



TYPICAL ELEVATION WHEN SILL IS 6'-0" OR LESS ABOVE THE FLOOR.



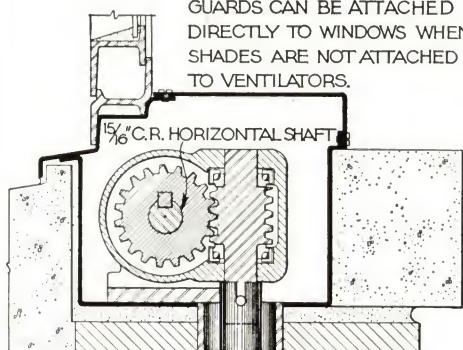
TYPICAL ELEVATION WHEN SILL IS MORE THAN 6'-0" ABOVE FLOOR USING CHAIN CONTROL.



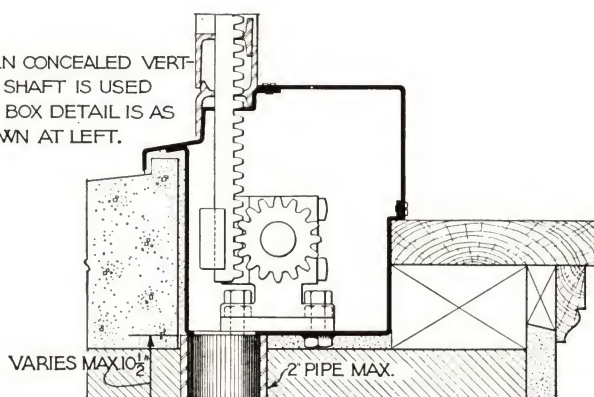
TYPICAL ELEVATION WHEN SILL IS MORE THAN 6'-0" ABOVE FLOOR USING CONCEALED VERTICAL SHAFT.



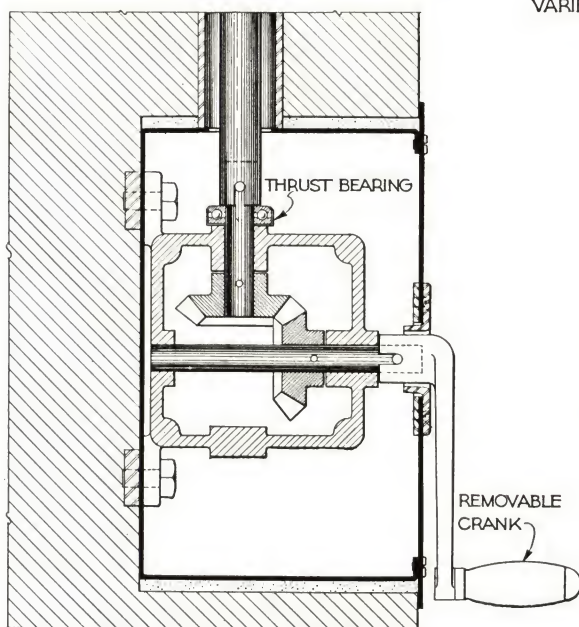
SCREENS AND/OR WIRE GUARDS CAN BE ATTACHED DIRECTLY TO WINDOWS WHEN SHADES ARE NOT ATTACHED TO VENTILATORS.



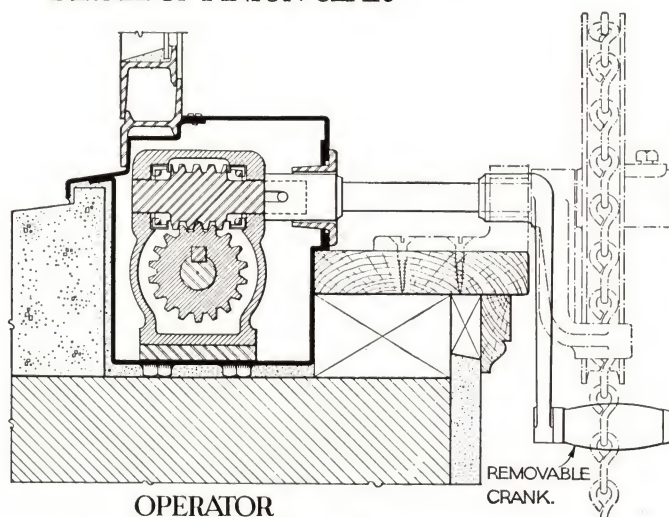
WHEN CONCEALED VERTICAL SHAFT IS USED SILL BOX DETAIL IS AS SHOWN AT LEFT.



DETAIL OF PINION GEAR



CONCEALED VERTICAL SHAFT WHEN SILL IS MORE THAN 6'-0" ABOVE FLOOR



OPERATOR

WHEN SILL IS 6'-0" OR LESS ABOVE FLOOR. ALTERNATE CHAIN CONTROL (SHOWN BY DOTTED LINES) WHEN SILL IS MORE THAN 6'-0" ABOVE FLOOR.

TRUSCON
STEEL COMPANY
Youngstown, Ohio

MECHANICAL OPERATORS
DONOVAN AWNING TYPE STEEL WINDOWS
SERIES 38

PLATE No.
P-10
OCTOBER, 1937

RESIDENCE CASEMENTS SERIES 5

TRUSCON Casements are modern windows of inherent beauty, architectural harmony, simplicity, fine quality and superior craftsmanship. They include the best time tested features in design, operation and serviceability. They are manufactured in numerous types and sizes to conform with any style of architecture. But regardless of the type, whether it be for fixed screen and operator type hardware or side hinged screen and non-operator type hardware, with or without vertical muntins, the basic construction elements are identical for each and every unit.

Tempryte Insulating windows for operator type casements are available for use in rigorous climates or for air conditioning.

Casements in a large range of sizes, with or without sill ventilators, transoms, and mullions, permit a selection of the exact types to meet individual requirements.

SPECIFICATIONS

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be Residence Casements, Series 5, as manufactured by Truscon Steel Company, Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Scope of Work—This contractor shall include in his work the furnishing of all steel casements complete, the adjusting after erection but before glazing, and the attaching of hardware, all as called for on drawings and specified herein. This contractor shall also furnish the necessary mastic as called for in the manufacturer's standards.

3 Material—Truscon specification low carbon new billet, hot-rolled steel, shall be used in the manufacture of all members.

4 Construction—(a) All casements and standard combinations shall be manufactured in complete units at factory. The nominal glass size shall be 8x12 in.

(b) All frames, stiles and rail members of swing leaves shall be Zee bars. All corners shall be mitered and electrically butt welded. Exposed faces at welds shall be ground smooth.

(c) All muntins shall be Tee Bars with a $\frac{5}{8}$ in. face and a depth of $\frac{3}{8}$ in., and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with face on the inside.

(d) Joints of muntins with frames, stiles and rails shall be tenoned, mortised and air hammer riveted. Horizontal muntins shall be punched for glazing clips.

(e) Windows shall be hinged to swing right or left as indicated.

(f) Continuous double contact weathering between swing leaves and frame shall be provided.

(g) All side hung swing leaves shall open outward and be equipped with heavy extension (cleaning) hinges securely electrically welded to frames and swing leaves.

(h) Transom ventilators shall be hinged at the top to open out and shall be equipped with close-up hinges.

(i) Sill ventilators shall be bottom hinged to open in and shall be equipped with steel butt hinges and two friction adjusters. All sill ventilators shall be prepared to receive standard fixed type screens applied to the outside. No special screen hardware necessary.

(j) Where combinations of standard units are required for any single opening, vertical and horizontal mullions shall be used to join them.

(k) A continuous drip shall be provided on transom bars of all standard swing leaf combinations, or at the head when the ventilator extends full height of the opening.

(l) All units shall be drilled to receive standard shade bracket hardware.

5 Unattached Hardware—(a) All unattached hardware shall be packed and shipped separately to prevent damage and shall be applied after erection.

Hardware shall be non-operator type or operator type. (Architect to specify which type is required.)



NON-OPERATOR TYPE

(b) For side hinged ventilators, standard black finish cam action locking handle shall be furnished. (Beveled brass strike plate shall be attached in shop.)

(c) For transom ventilators, standard black finish push bar, notched to hold ventilator open in several positions, shall be furnished.

(d) For sill ventilators standard black finish cam action locking handle and keeper shall be furnished. The handle shall conform in design with the side hinged ventilator locking handle.

OPERATOR TYPE

(e) Operator type hardware shall control the ventilator independently of the screen. The underscreen operator shall securely hold the ventilator in open positions.

(f) For side hinged ventilators standard bronze finish concealed latch locking handle and worm drive underscreen operator shall be furnished. (Locking handle keeper and bronze channel guide for operator shall be attached in shop.)

(g) Concealed latch locking handles shall have both cam action and kick out action.

(h) Worm drive underscreen operators and locking handles shall have bronze lacquer finish. Operator arm is cadmium plated.

(i) For transom ventilators standard bronze finish push bar shall be furnished.

(j) For sill ventilators standard concealed latch locking handle, conforming in design with side hinged ventilator locking handle shall be furnished.

6 Painting—(a) Casements shall be given one prime coat of steel grey mineral paint at factory before shipment.

(b) All windows shall be BONDORIZED before painting (standard east of Rockies.) (West of Rockies at slight extra cost.)

7 Erection—(a) Each casement unit shall be set plumb and true, aligned after installation and adjusted before glazing.

(b) Mastic in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

(When so desired, the Erection Division of TRUSCON STEEL COMPANY will contract for the erection and adjusting of all casements in prepared openings.)

8 Glazing—(To be done by glazing contractor.) All casements shall be glazed on the outside. Glass shall be held in place by Truscon copper clad, spring steel wire glazing clips. All glass shall be bed and face puttied with special steel casement putty.

Notes: Glazing clips and mastic are furnished and shipped with casements without additional charge.

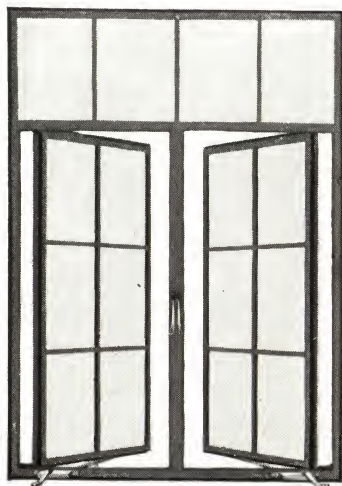
Cam locking handles and worm and gear operators can be furnished in solid bronze, Old English, Butler Nickel or Chromium finish at an additional cost, Architect to specify finish.

UNDERWRITERS' LABEL

Underwriters' label of approval may be specified for all standard sizes shown outside putty glazed, provided glass lights do not exceed 125 sq. in. exposed glass area.

RESIDENCE CASEMENTS SERIES 5

OPERATOR TYPE



SERIES 5-A

Standard muntin arrangement and designed for worm drive operator control and concealed locking handle. Provisions are made for use of fixed type screens. A stool gauge is shipped attached to sill member to insure proper location of stool.



SERIES 5-B

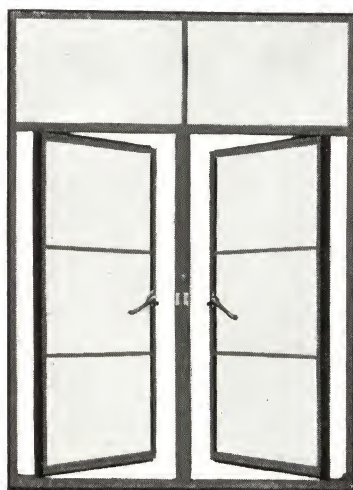
Alternate vertical muntin bars omitted. This style of casement has been developed for use in building designs where the accentuation of horizontal lines is desired. All other construction features are identical with Series 5-A casements.

NON-OPERATOR TYPE



SERIES 5-C

Designed for use where a non-operator type window is desired. Provided with a cam acting locking handle and friction type hinges to hold window in any desired position. Provisions will be made on these windows for side hinged or wicket screens when so specified. Primarily intended for use where screening is not a prime factor.



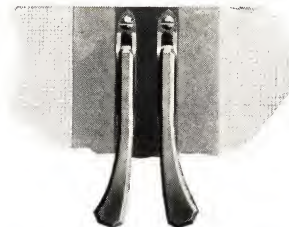
SERIES 5-D

Alternate vertical muntin bars omitted. Developed for use in building designs where the accentuation of horizontal lines is desired. Provisions will be made on these windows for side hinged or wicket screens when so specified. Primarily intended for use where screening is not a prime factor.

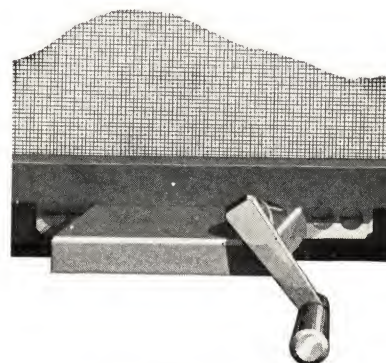
Note: Casement types indicated on pages 14-15-16 can be furnished in either 5-A, 5-B, 5-C or 5-D Series.

HARDWARE FOR TRUSCON RESIDENCE CASEMENTS

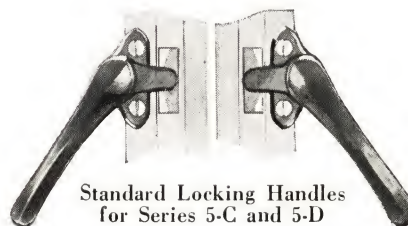
Series 5



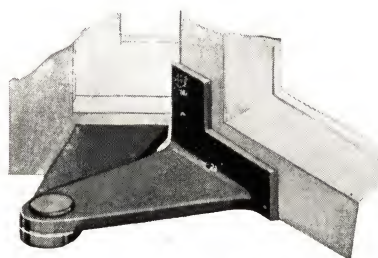
Screen Type Locking Handles for Series 5-A and 5-B



Worm Drive Operator for Series 5-A and 5-B



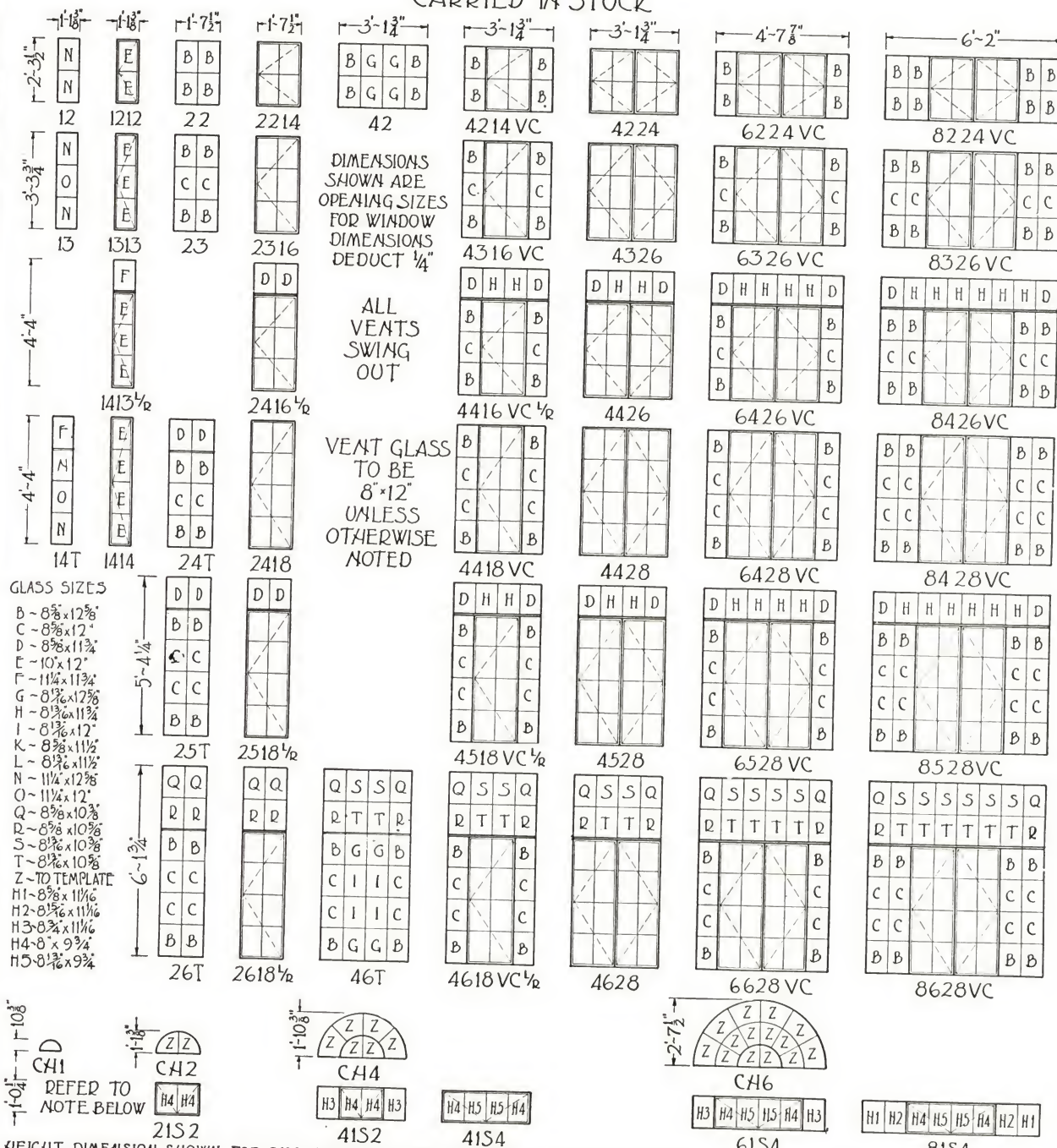
Standard Locking Handles for Series 5-C and 5-D



Extension Hinge for Series 5 Casements

STANDARD UNITS

CARRIED IN STOCK



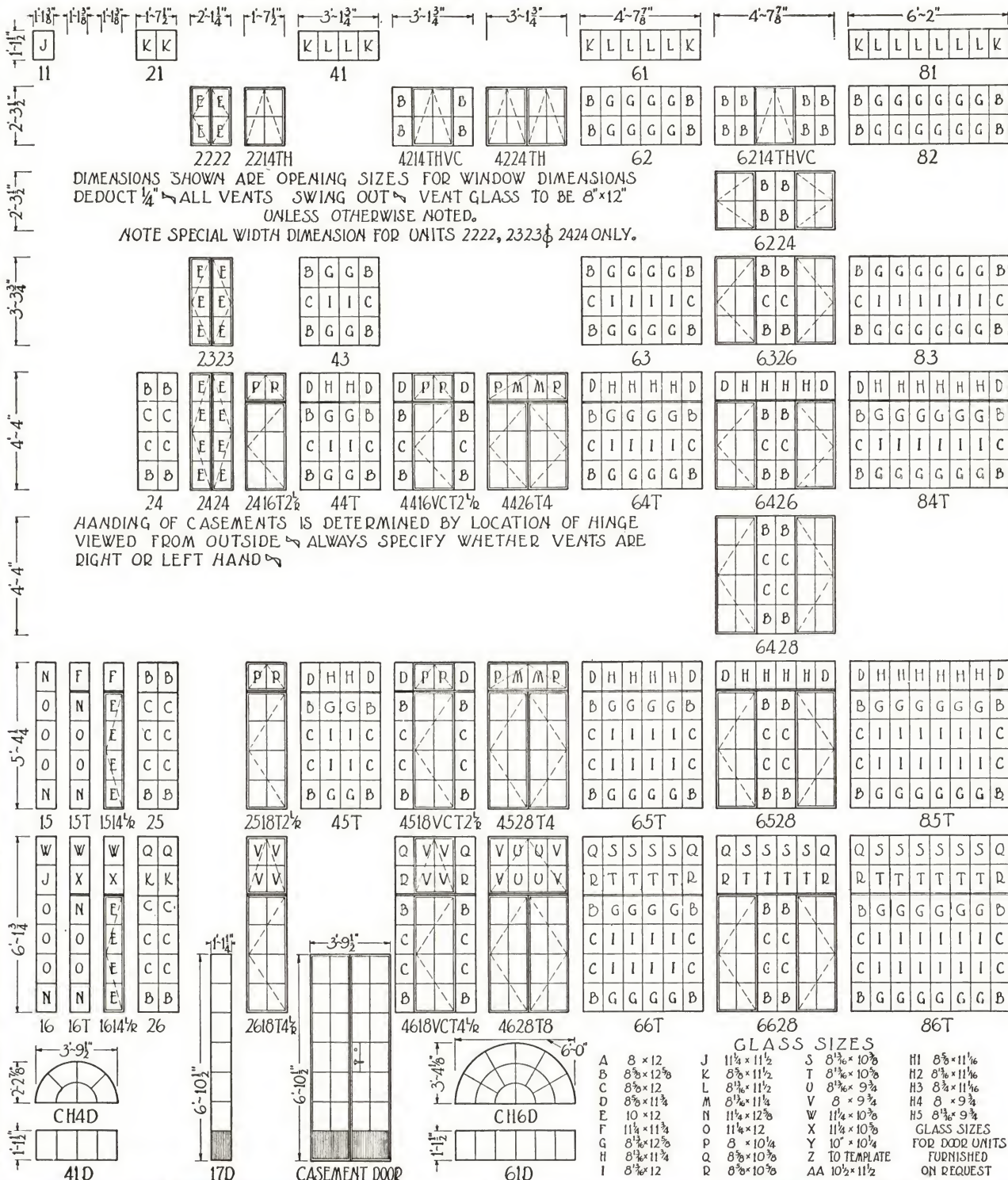
HEIGHT DIMENSION SHOWN FOR SILL UNITS IS DIMENSION TO BE ADDED TO SECURE OPENING DIMENSION OF COMBINATION
UNITS FOR OPENING DIMENSION OF SILL UNITS USED AS SEPARATE WINDOWS ADD $\frac{3}{4}$ " TO HEIGHT DIMENSION SHOWN
ALL VENTS VIEWED FROM OUTSIDE HANDLING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE ALWAYS
SPECIFY WHETHER VENTS ARE RIGHT OR LEFT HAND

TRUSCON
STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES RESIDENCE CASEMENTS SERIES 5

PLATE No.
CR-21
JULY, 1936

FACTORY SHIPMENT

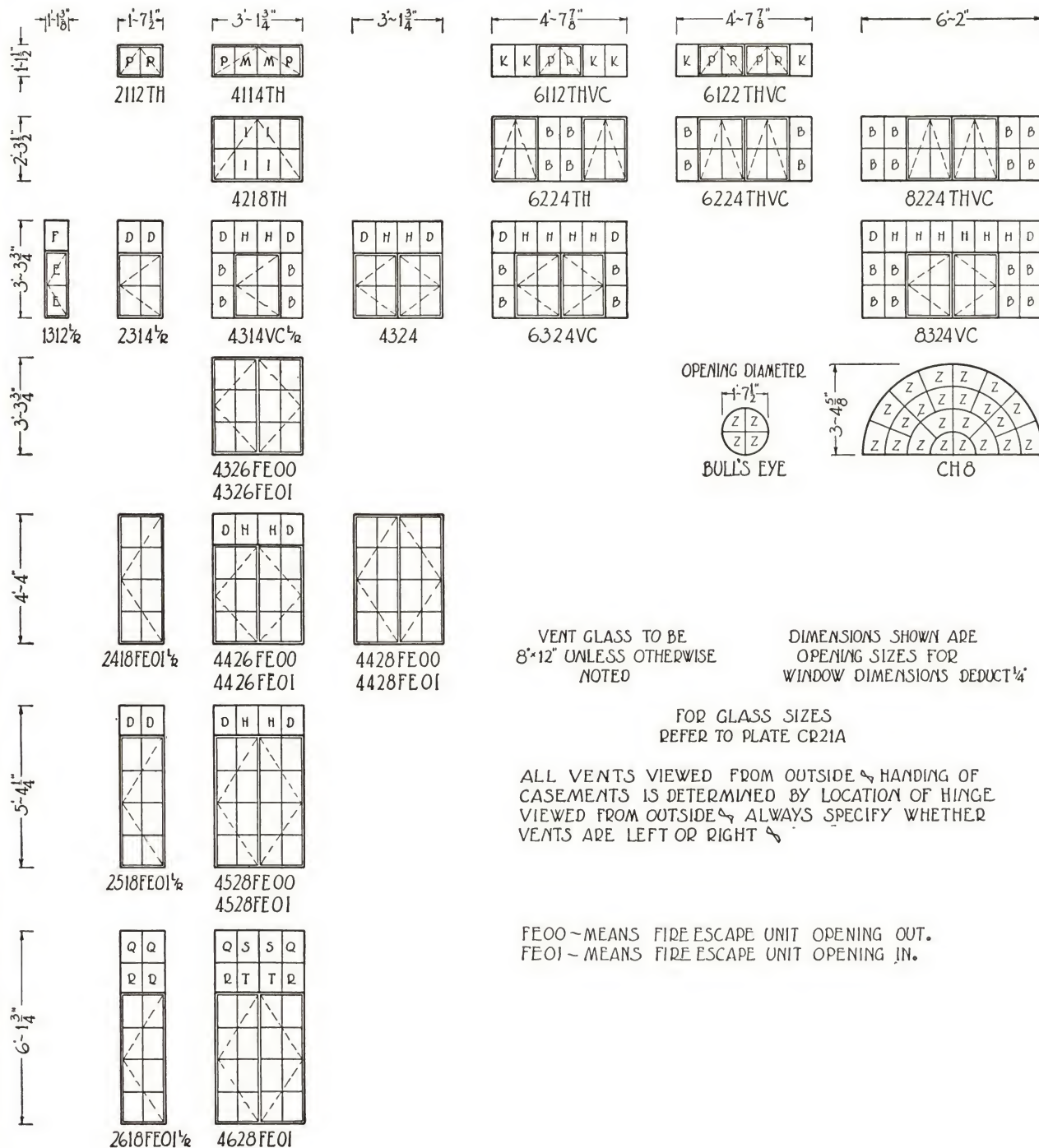


TRUSCON
STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES
RESIDENCE CASEMENTS
SERIES 5

PLATE No.
CR-21A
JULY, 1936

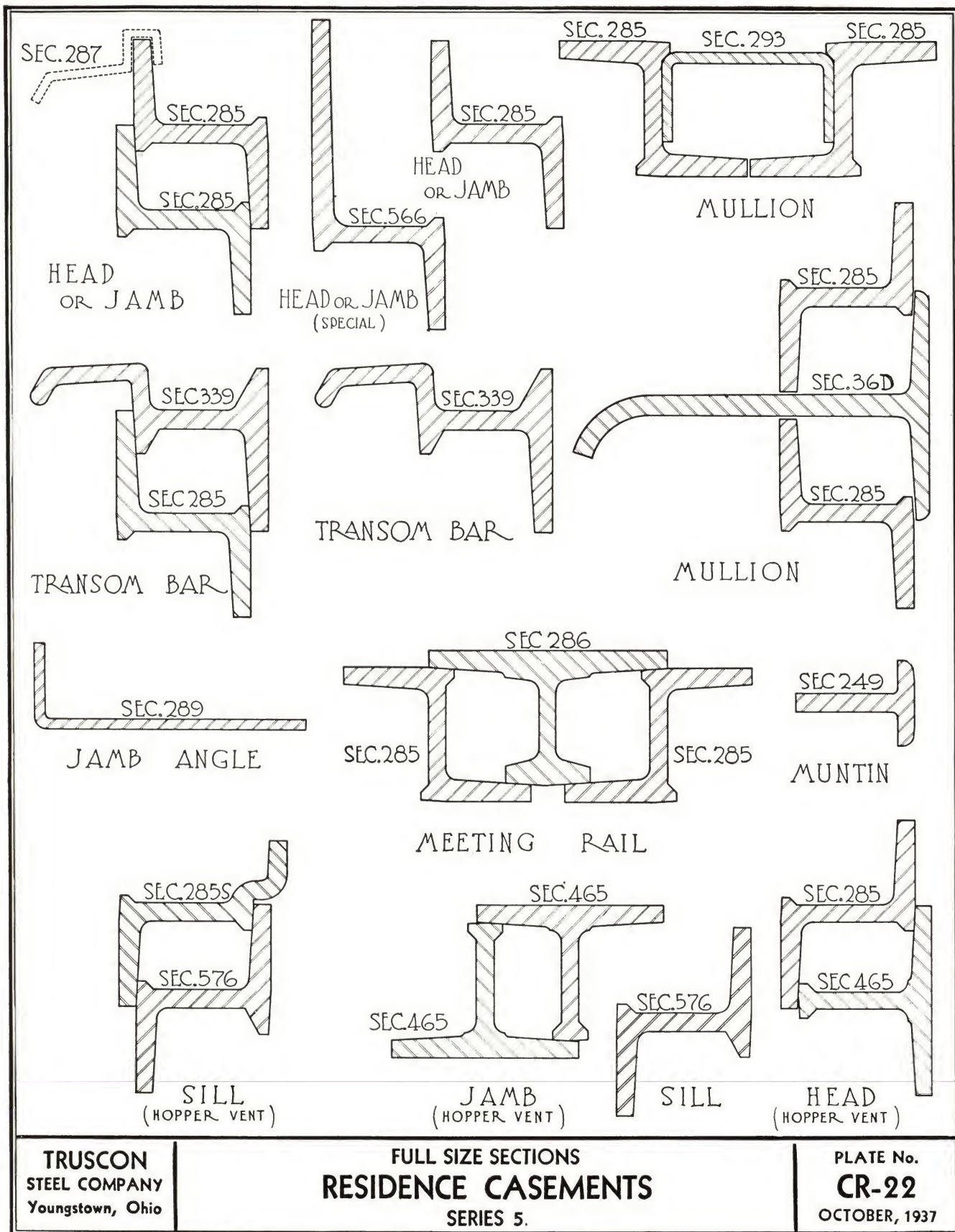
MADE ON ORDER

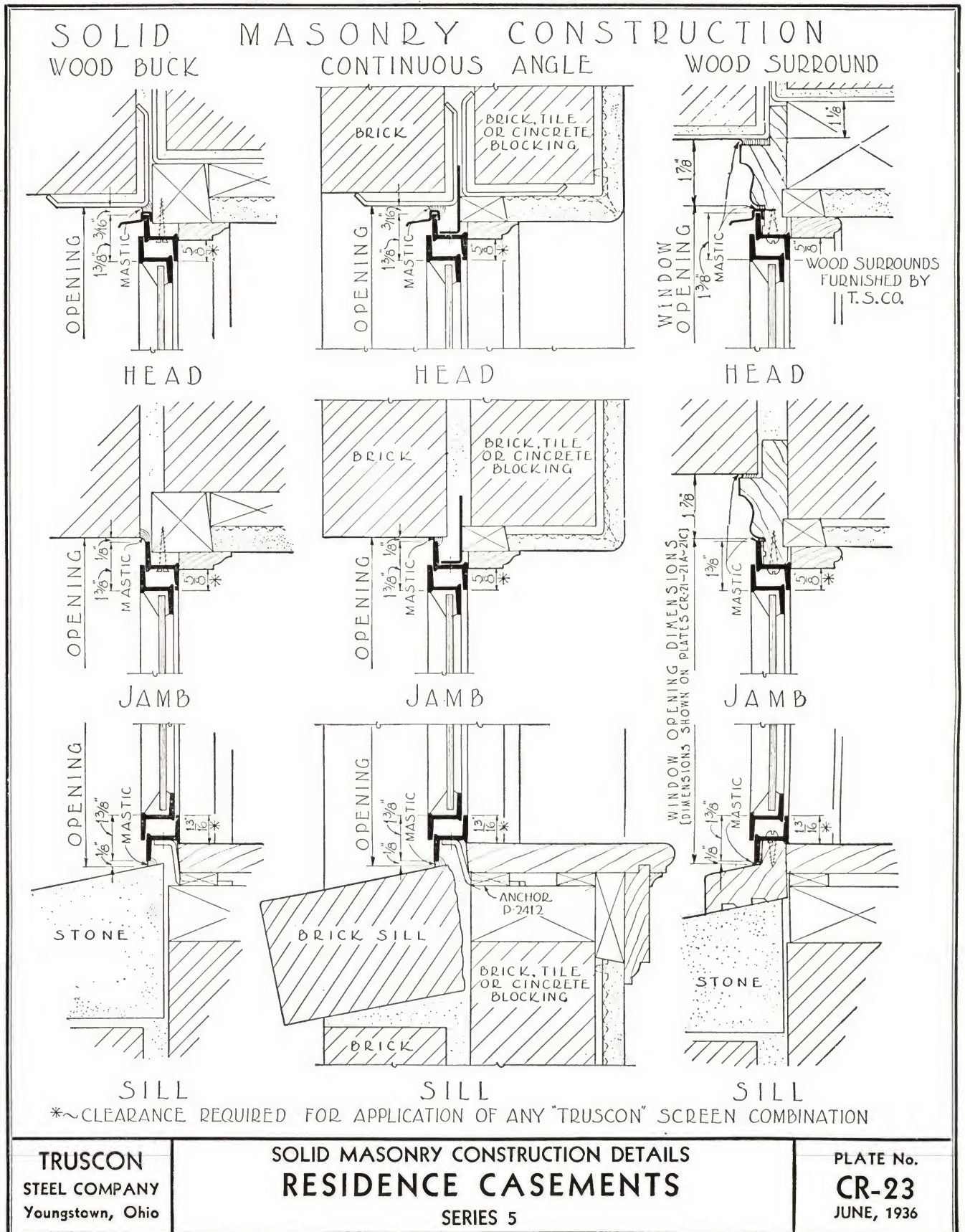


TRUSCON
STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES
RESIDENCE CASEMENTS
SERIES 5

PLATE No.
CR-21C
OCTOBER, 1934

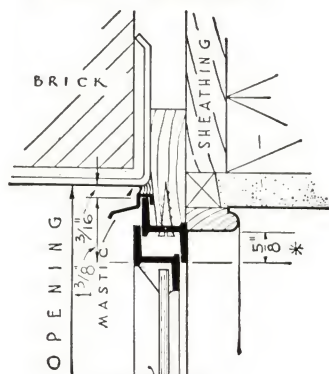




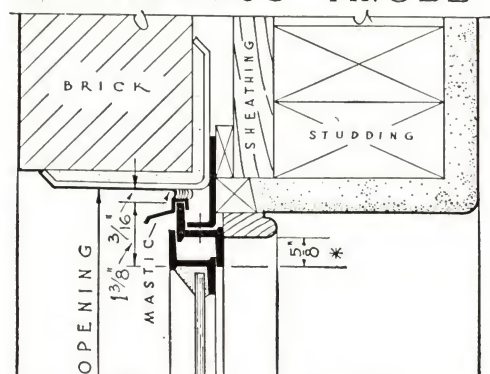
BRICK
WOOD BUCK

VENEER
CONTINUOUS ANGLE

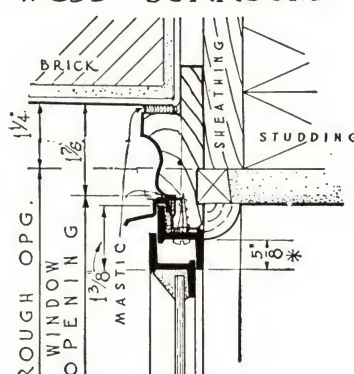
CONSTRUCTION
WOOD SURROUND



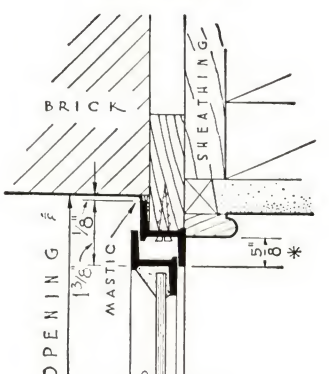
HEAD



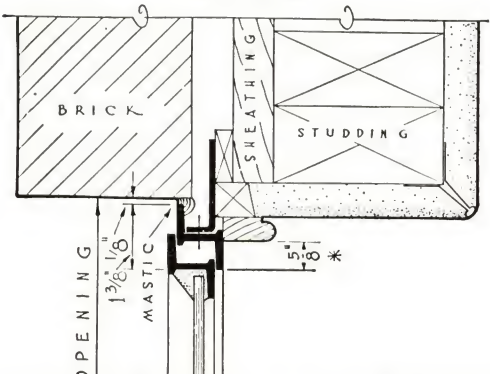
HEAD



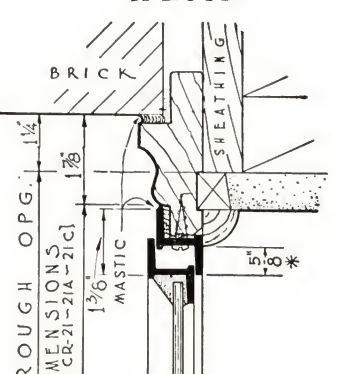
HEAD



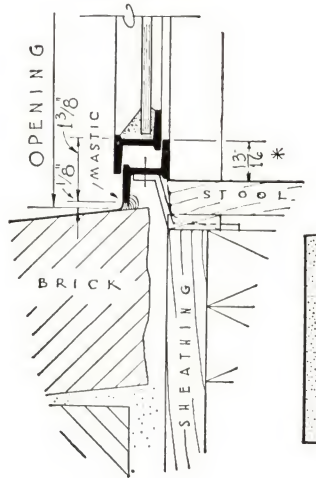
JAMB



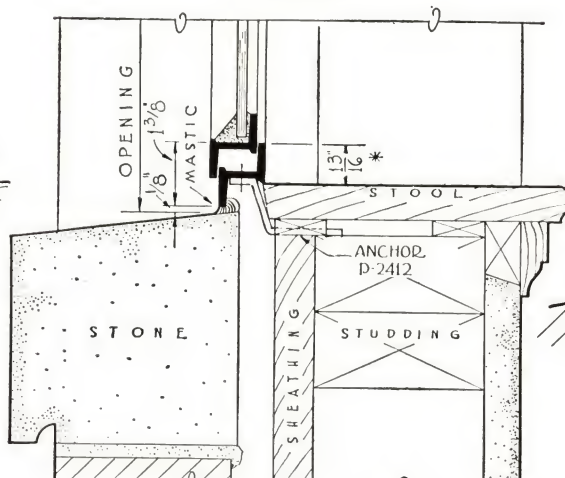
JAMB



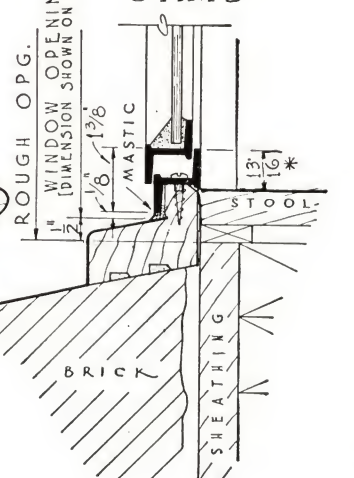
JAMB



SILL



SILL



SILL

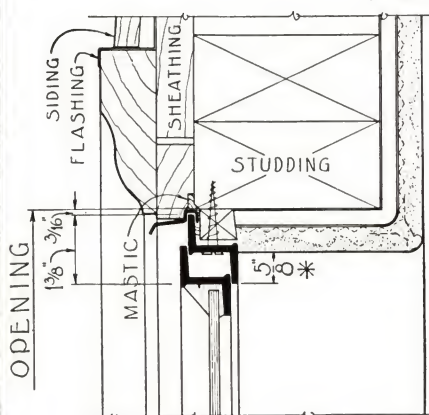
* CLEARANCE REQUIRED FOR APPLICATION OF ANY TRUSCON® SCREEN COMBINATION.

TRUSCON
STEEL COMPANY
Youngstown, Ohio

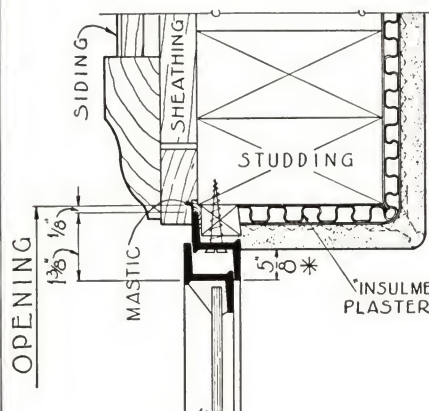
DETAILS OF BRICK VENEER CONSTRUCTION
RESIDENCE CASEMENTS
SERIES 5

PLATE No.
CR-24
JUNE, 1936

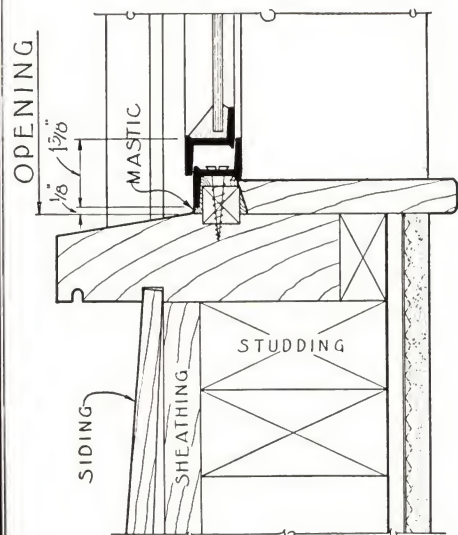
FRAME CONSTRUCTION



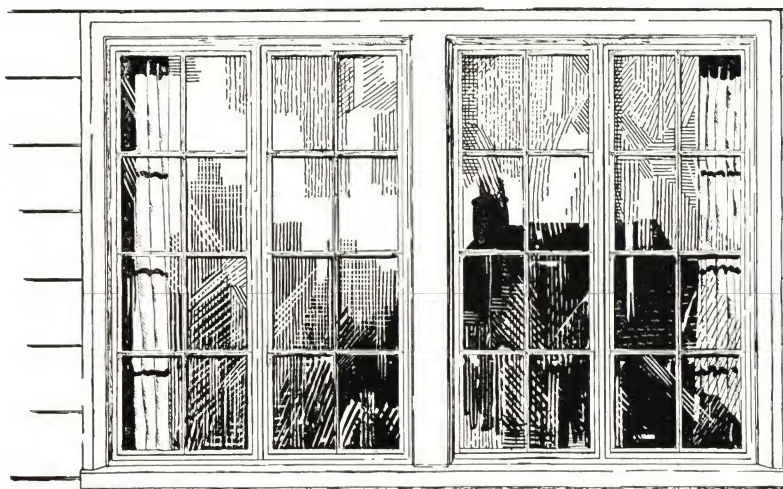
HEAD



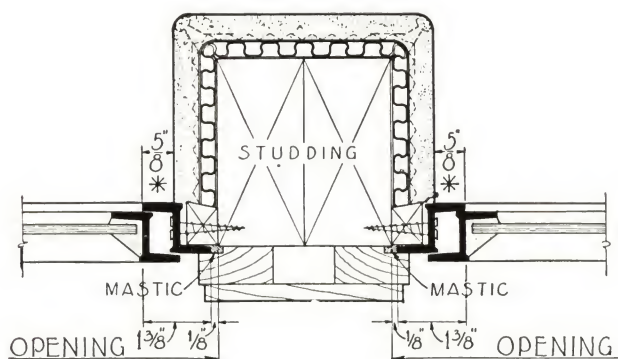
JAMB



SILL



EXTERIOR ELEVATION
TWO WINDOW BAY ~ FRAME MULLION



MULLION

*~CLEARANCE REQUIRED FOR INSTALLATION OF
ANY "TRUSCON" SCREEN COMBINATION

TRUSCON
STEEL COMPANY
Youngstown, Ohio

FRAME CONSTRUCTION DETAILS
RESIDENCE CASEMENTS
SERIES 5

PLATE No.
CR-25
JULY, 1936

HOME DEVELOPMENT CASEMENTS

SERIES 5HM

THE Truscon Home Development Window, designed primarily for homes where cost is of paramount consideration, is truly a modern window. Horizontal lines are accentuated. Hardware and screens are simple in design, but offer convenience in opening or closing the window. Screens are "insect tight." Sections used in the manufacture of the Home Development Casement are the same as those used in the production of Residence Casements.

Twenty sizes and 32 types are carried in stock for immediate shipment. These stock units should take care of practically any job requirements.

GLASS SIZE

The nominal glass size of 16 in. x 12 in., as compared with the 8 in. x 12 in. glass size of the Residence Casement, means a considerable saving in glazing costs.

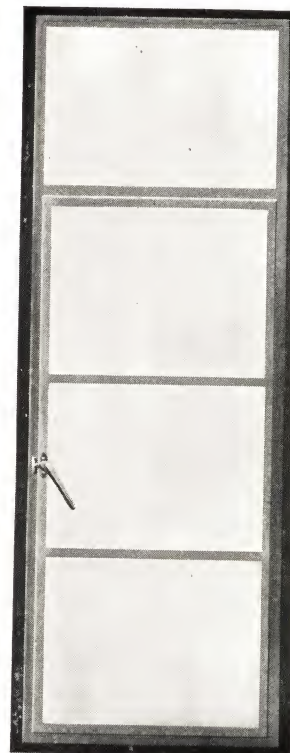
HARDWARE

This locking handle has been designed especially for use with the Home Development Casement. Cam action insures the ventilators being drawn tightly against the frame for better weathering. Handles are black lacquer finish over cast metal. Extension type friction hinges

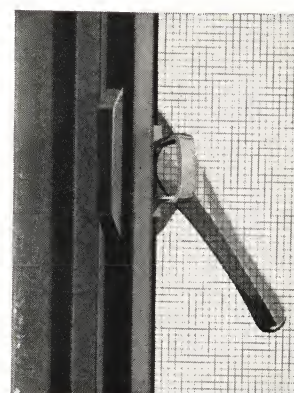
hold the ventilator in any open position and make it possible to wash the outside of the glass from inside the room.

SCREEN

The screen used with the Home Development Casement is of the side hinged type. The new type locking handles are so designed that the screen frame fits tightly against the casement frame even when the ventilator is closed. Screens have rewirable electro-galvanized steel frame and (.0113 in. diameter) bronze screen cloth, 16 mesh. Frame is of angle construction. The frame is finished with one coat of baked enamel.



Locking Handle



Detail of Screen Frame

HM2214 1/2	HM4214 JH 1/2	HM4224	HM6224 JH	HM6214 VC 1/2
HM2314 1/2	HM4314 JH 1/2	HM4324	HM6324 JH	HM6314 VC 1/2
HM2416 1/2	HM4416 JH 1/2	HM4426	HM6426 JH	HM6416 VC 1/2
HM2518 1/2	HM4518 JH 1/2	HM4528	HM6528 JH	HM6518 VC 1/2

— GLASS LIST —

HORIZONTAL MUNTIN WINDOWS

GLASS SIZE FOR ALL VENTS IS 16" x 12"

B ~ 17 1/2" x 12 3/8" V ~ 17 3/8" x 11 1/4"

D ~ 17 1/2" x 11 3/4" W ~ 17 1/8" x 11 1/4"

E ~ 17 1/2" x 12"

— NOTES —

DIMENSIONS SHOWN ARE WINDOW OPENING DIMENSIONS.

ALL UNITS ARE VIEWED FROM OUTSIDE.

ALL VENTS ARE SIDE HINGED TO SWING OUT.

HANDING OF SINGLE VENTS MUST ALWAYS BE STATED.

TYPES AND SIZES... STOCK UNITS

ARCHITECTURAL CASEMENTS SERIES 15

THE Architectural Casement, Series 15, has been designed to fill the need of a heavier type of casement for better class residential, apartment, public and semi-public buildings. Although standard types are available to fill average requirements, these casements can be built to conform with any architectural design.

SPECIFICATIONS

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be Architectural Casements, Series 15, as manufactured by Truscon Steel Company of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—Truscon specification, low carbon, new billet, hot-rolled, steel shall be used in the manufacture of all members.

3 Construction—(a) *All units* shall be square and true and constructed of sections not less than $1\frac{7}{16}$ in. deep. The combined weight of frame and ventilator sections exclusive of glazing beads or sub-frames shall be not less than 3.51 pounds per linear foot. The outside framing section shall be a channel leg section continuous from sill to head and jamb to jamb and shaped for double flat contact weathering of not less than $\frac{3}{8}$ in. between frames and swing leaves. Each corner of swing leaves and frames shall be mitered, electrically butt welded and ground smooth.

(b) *Muntins* shall be specially designed Tee Bar sections and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted (see note).

(c) *All stiles, rails, frames and muntins* shall be prepared for outside putty glazing with spring clips. (See note.)

(d) *All side hinged ventilators* shall open out unless otherwise specified and shall be equipped with Truscon design extension three-knuckle steel hinges having bronze bushing and bronze bearing washers and acorn head steel hinge bolt with acorn nut. Hinge design shall prevent removal of locked ventilator by taking out hinge bolt.

Top hinged ventilators shall be hung on steel butt hinges with bronze pins.

(e) *A continuous drip* shall be provided on transom bars of all standard swing leaf combinations, or at the head where ventilators extend full height of the opening.

(f) *Windows* shall be prepared to receive either operator type or non-operator type hardware as hereinafter specified.

4 Hardware—(a) *All hardware* shall be bronze, medium statuary finish.

NON-OPERATOR TYPE

(b) *For side hinged swing leaves* up to and including five feet in height, a bronze cam acting locking handle and bronze strike shall be furnished. For side hinged swing leaves over five feet in height or when center line of swing leaf is 6 ft. 3 in. or more from the floor, bronze double locking device and bronze strikes shall be furnished.

(c) *For top hinged transoms* a bronze push arm shall be furnished.

(d) *For double vented units* with clear opening (no meeting rail) bronze cremone bolt hardware shall be furnished.

OPERATOR TYPE

(e) *Operator type hardware* shall control the ventilator independently of the screen. The underscreen operator shall hold the ventilator securely in open position.

(f) *For hinged ventilators* solid bronze concealed latch locking handle and worm drive underscreen operator shall be furnished. (Locking handle keeper and channel guide for operator shall be attached in the shop.)

(g) *Concealed latch locking handles* shall have both cam action and kick out action.

For ventilators over 5 ft. 0 in. in height a double concealed latch locking device shall be furnished.

(h) *Worm drive underscreen operators* shall have $\frac{3}{4}$ in. diameter worm and operator arm with machine cut teeth. Case and crank shall be solid bronze, the arm shall be cadmium plated steel.

(i) *For top hinged ventilators* a heavy solid bronze underscreen push arm shall be furnished.

5 Painting—(a) Casements shall be given one coat of protective paint at factory before shipment.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

6 Erection—(a) *Each unit* shall be set plumb and true in the opening, securely wedged and held in alignment during construction. After windows have been placed in opening and before they have been glazed, the ventilator shall be carefully adjusted.

(b) *Mastic* in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

7 Glazing—(To be done by glazing contractor.) All casements shall be glazed on the outside with glazing clips (See note).

Notes Muntin bars may be omitted if desired.

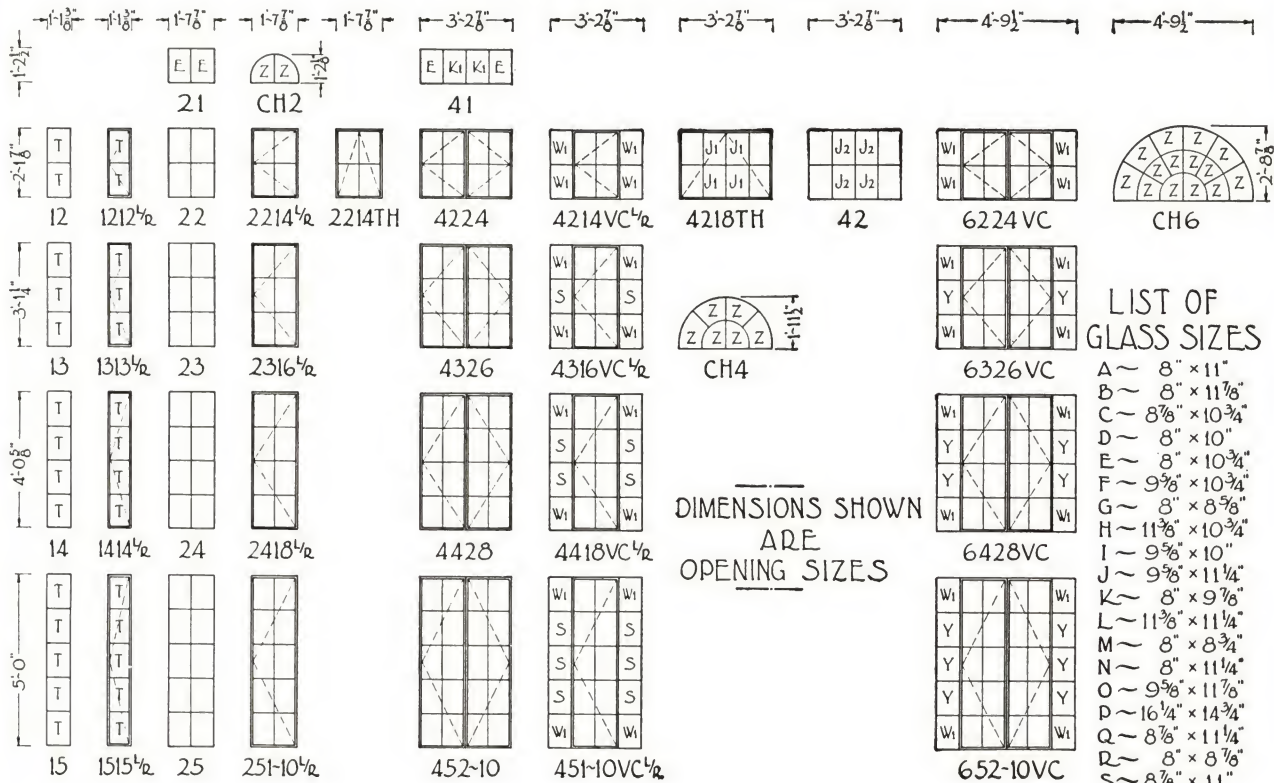
Windows may be inside bead glazed if specified.

Architectural Casements, Series 15, can be furnished to "open in."

UNDERWRITERS' LABEL

Underwriters' Label of approval may be specified for sizes not exceeding 6 ft. 6 in. in width and 6 ft. 6 in. height. Mullions not permitted. Side hinged, (outswing only) ventilators limited to 2 ft. 6 in. wide and 6 ft. 0 in. high and other ventilators 5 ft. 0 in. wide and 2 ft. 6 in. high. Outside putty glazed individual lights are limited to 125 sq. in. exposed area, if standard muntin bar is used, or 350 sq. in. exposed area, if extra heavy muntin bar is used, and 155 sq. in., exposed area, if inside bead glazing is used.

STANDARD TYPES



LIST OF GLASS SIZES

$A \sim 8'' \times 11''$
 $B \sim 8'' \times 11\frac{1}{2}''$
 $C \sim 8\frac{1}{2}'' \times 10\frac{3}{4}''$
 $D \sim 8'' \times 10''$
 $E \sim 8'' \times 10\frac{3}{4}''$
 $F \sim 9\frac{1}{2}'' \times 10\frac{3}{4}''$
 $G \sim 8'' \times 8\frac{1}{2}''$
 $H \sim 11\frac{1}{2}'' \times 10\frac{3}{4}''$
 $I \sim 9\frac{1}{2}'' \times 10''$
 $J \sim 9\frac{1}{2}'' \times 11\frac{1}{4}''$
 $K \sim 8'' \times 9\frac{1}{2}''$
 $L \sim 11\frac{1}{2}'' \times 11\frac{1}{4}''$
 $M \sim 8'' \times 8\frac{1}{4}''$
 $N \sim 8'' \times 11\frac{1}{4}''$
 $O \sim 9\frac{1}{2}'' \times 11\frac{1}{2}''$
 $P \sim 16\frac{1}{4}'' \times 14\frac{3}{4}''$
 $Q \sim 8\frac{1}{2}'' \times 11\frac{1}{4}''$
 $R \sim 8'' \times 8\frac{1}{2}''$
 $S \sim 8\frac{1}{2}'' \times 11''$
 $T \sim 9\frac{1}{2}'' \times 11''$
 $V \sim 11\frac{1}{2}'' \times 11''$
 $W \sim 9\frac{1}{2}'' \times 9\frac{1}{2}''$
 $X \sim 9\frac{1}{2}'' \times 10\frac{1}{2}''$
 $Y \sim 8\frac{1}{16}'' \times 11''$
 $Z \sim$ TO TEMPLATE
 $B_1 \sim 11\frac{3}{8}'' \times 10\frac{7}{8}''$
 $D_1 \sim 8\frac{1}{4}'' \times 10\frac{3}{8}''$
 $K_1 \sim 9\frac{1}{8}'' \times 10\frac{3}{4}''$
 $N_1 \sim 16\frac{1}{4}'' \times 13\frac{7}{8}''$
 $O_1 \sim 9\frac{1}{4}'' \times 11\frac{1}{4}''$
 $P_1 \sim 8\frac{3}{4}'' \times 10\frac{3}{4}''$
 $S_1 \sim 9\frac{1}{2}'' \times 8\frac{3}{8}''$
 $U_1 \sim 9\frac{1}{16}'' \times 8\frac{3}{4}''$
 $V_1 \sim 9\frac{3}{16}'' \times 8\frac{1}{8}''$
 $W_1 \sim 8\frac{1}{16}'' \times 11\frac{1}{8}''$
 $X_1 \sim 8\frac{1}{8}'' \times 10\frac{1}{2}''$
 $A_2 \sim 8\frac{1}{16}'' \times 10\frac{3}{8}''$
 $C_2 \sim 8\frac{1}{16}'' \times 12\frac{1}{2}''$
 $E_2 \sim 8\frac{1}{16}'' \times 10\frac{3}{8}''$
 $F_2 \sim 8\frac{3}{4}'' \times 11\frac{1}{4}''$
 $G_2 \sim 8\frac{3}{8}'' \times 10\frac{3}{8}''$
 $I_2 \sim 9\frac{1}{8}'' \times 11\frac{1}{8}''$
 $J_2 \sim 9\frac{1}{8}'' \times 11''$
 $K_2 \sim 8\frac{3}{8}'' \times 10\frac{1}{2}''$
 $L_2 \sim 16\frac{1}{4}'' \times 22\frac{1}{4}''$
 $M_2 \sim 16\frac{1}{4}'' \times 16\frac{5}{8}''$
 $Q_2 \sim 9\frac{1}{8}'' \times 10\frac{3}{8}''$

NOTES

Dimensions shown are opening sizes.

All casements are viewed from the outside.

Handing of casements is determined by location of hinges. Hinged at the right is a right hand casement. Hinged at the left is a left hand casement.

Muntin bars may be omitted if desired.

All casements to be set in mastic cement.

Standard mullion dimension is 1/4".

Where mullions are used, to obtain opening dimensions, add together opening dimensions of the specific windows to be combined.

Unless otherwise noted glass size to be 8" x 11".

For casement door, sidelights and transoms, types and sizes
see plate CA-10, page 30.

TRUSCON
STEEL COMPANY
Youngstown, Ohio

STANDARD TYPES AND SIZES

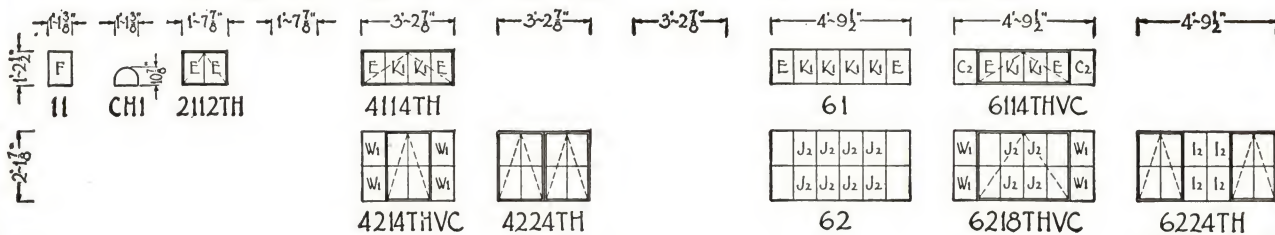
ARCHITECTURAL STEEL CASEMENTS

SERIES 15

PLATE No.
CA-1
NOVEMBER, 1934

NON-STOCK

TYPES



DIMENSIONS SHOWN ARE OPENING SIZES
FOR GLASS SIZES AND NOTES REFER TO PLATE CA-1

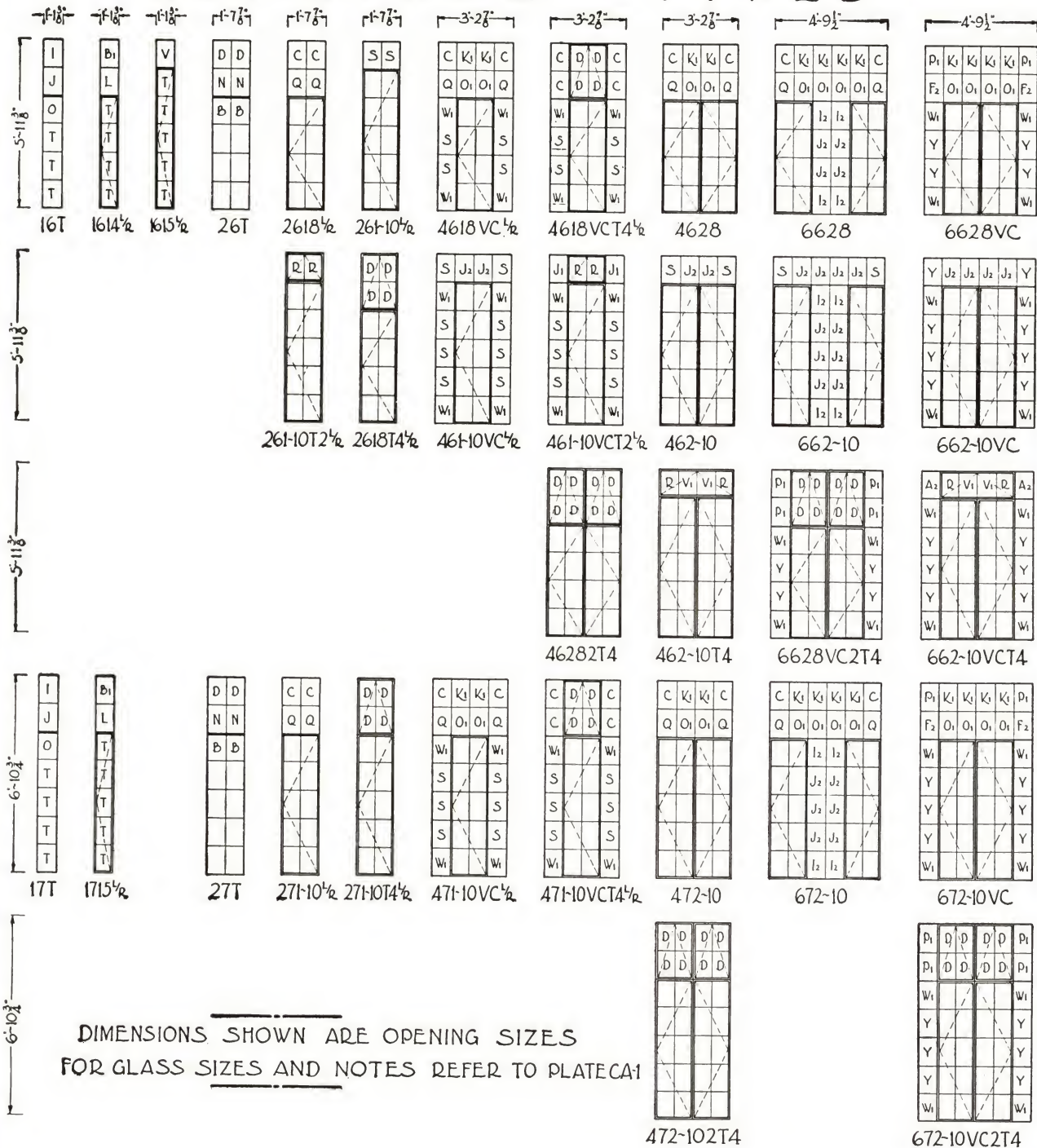


TRUSCON
STEEL COMPANY
Youngstown, Ohio

NON STOCK-TYPES AND SIZES
ARCHITECTURAL STEEL CASEMENTS
SERIES 15

PLATE No.
CA-2
NOVEMBER, 1934

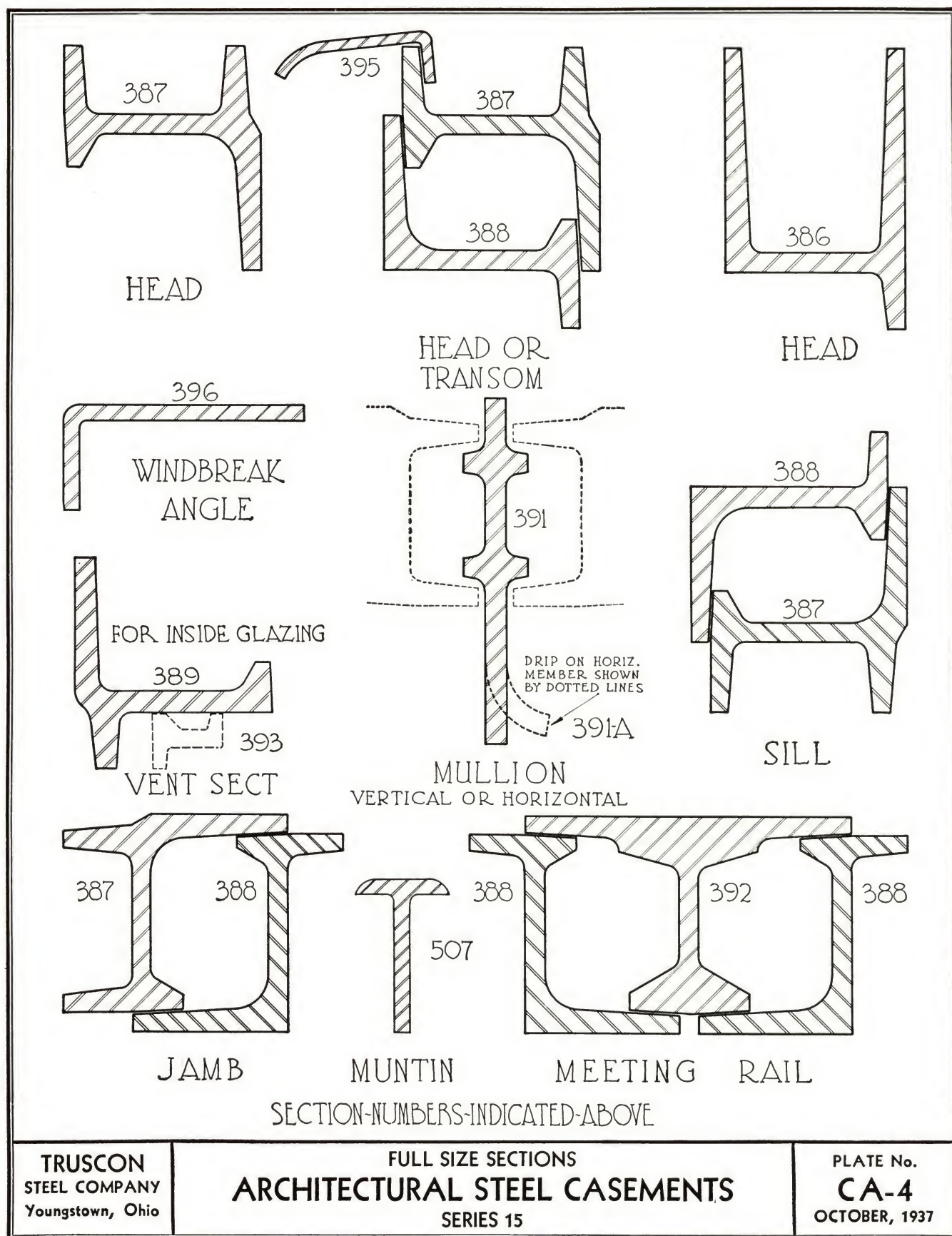
NON-STOCK TYPES



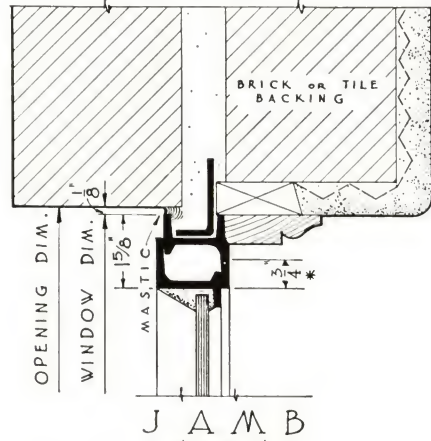
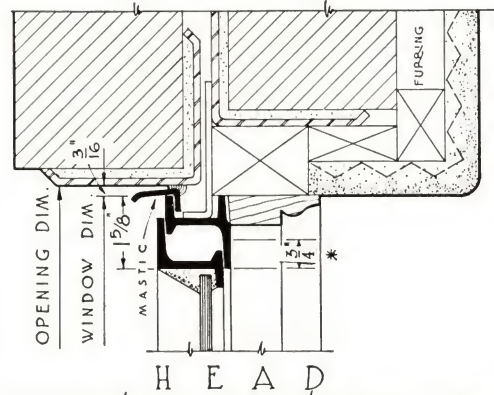
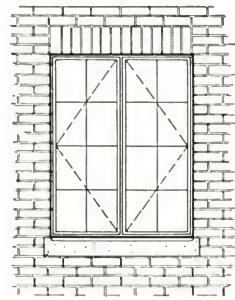
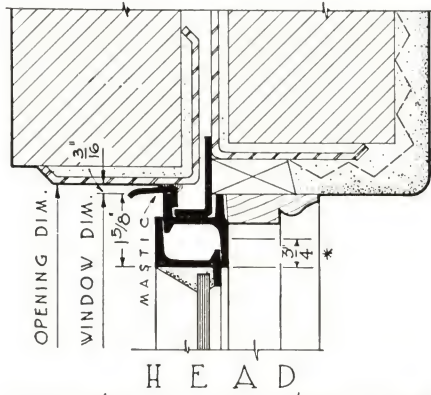
TRUSCON
STEEL COMPANY
Youngstown, Ohio

NON STOCK-TYPES AND SIZES
ARCHITECTURAL STEEL CASEMENTS
SERIES 15

PLATE No.
CA-3
NOVEMBER, 1934

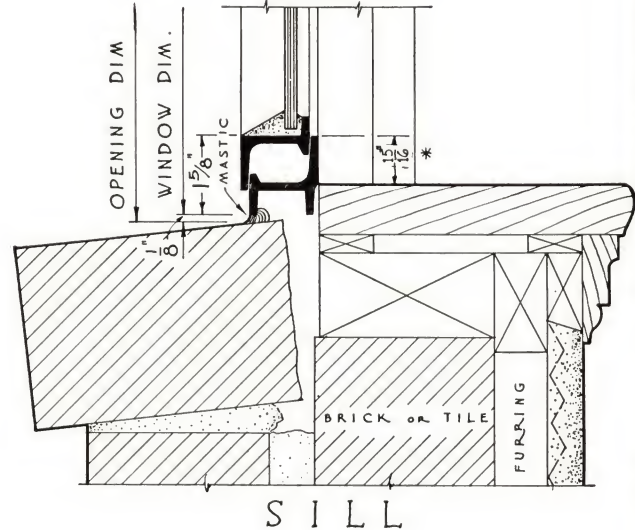
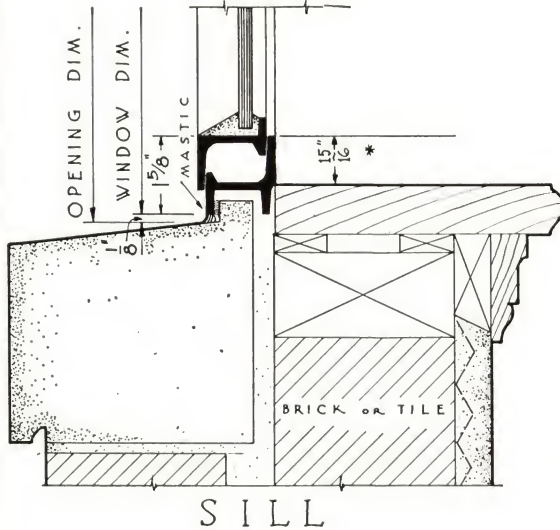
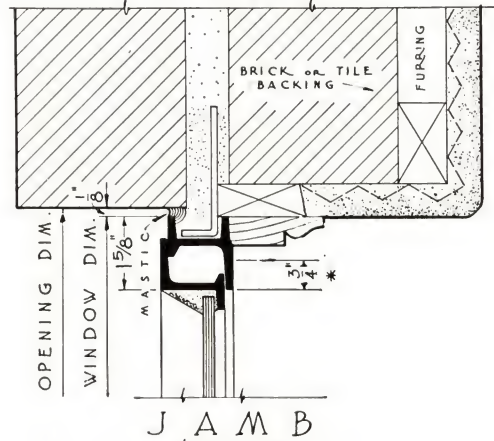


SOLID MASONRY DETAILS



TYPICAL
UNIT

NOTE
* - CLEARANCE
REQUIRED FOR
ANY TYPE OF
TRUSCON SCREEN
COMBINATION.

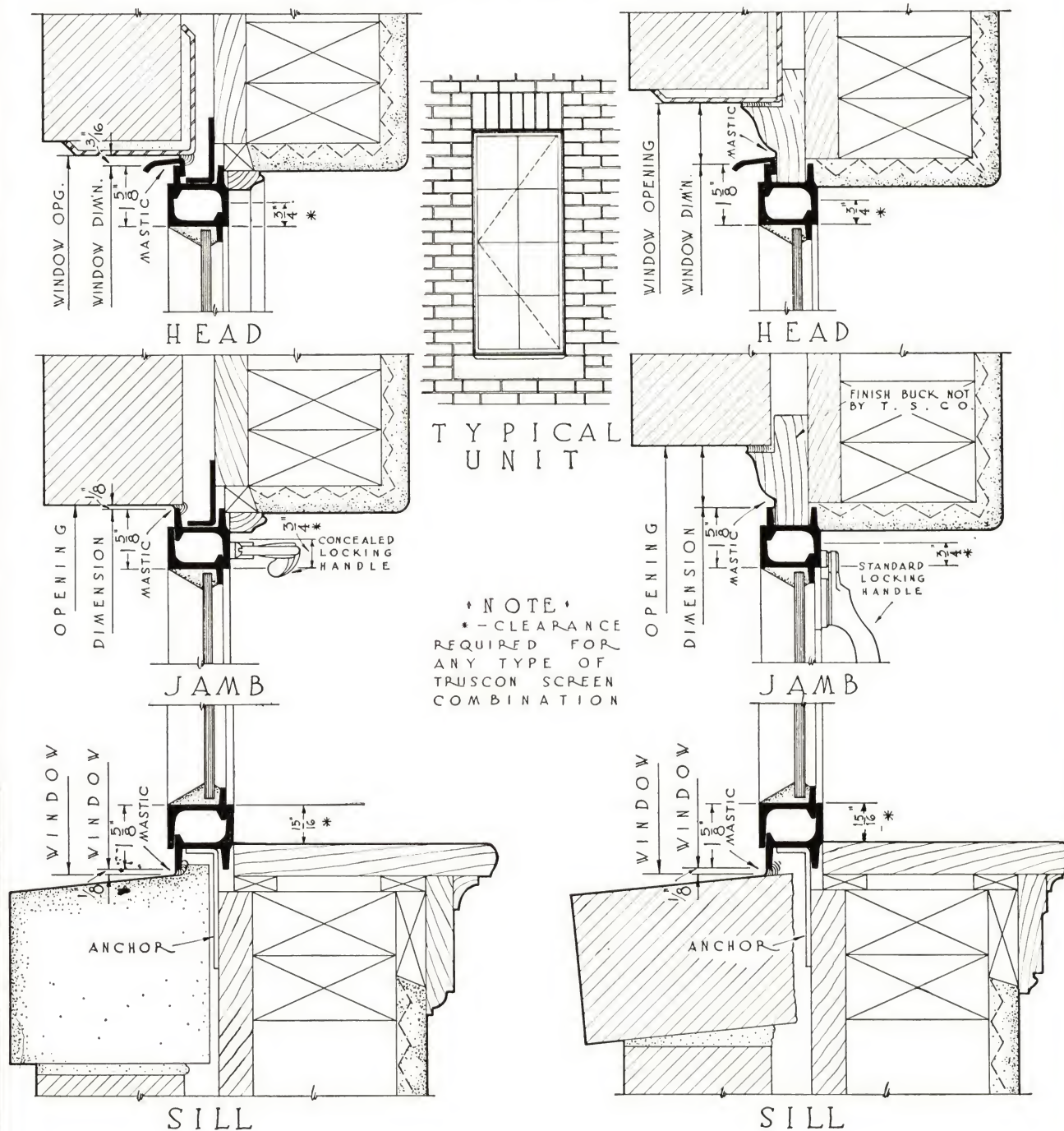


TRUSCON
STEEL COMPANY
Youngstown, Ohio

SOLID MASONRY INSTALLATION DETAILS
ARCHITECTURAL STEEL CASEMENTS
SERIES 15

PLATE No.
CA-7
AUGUST, 1936

BRICK VENEER DETAILS

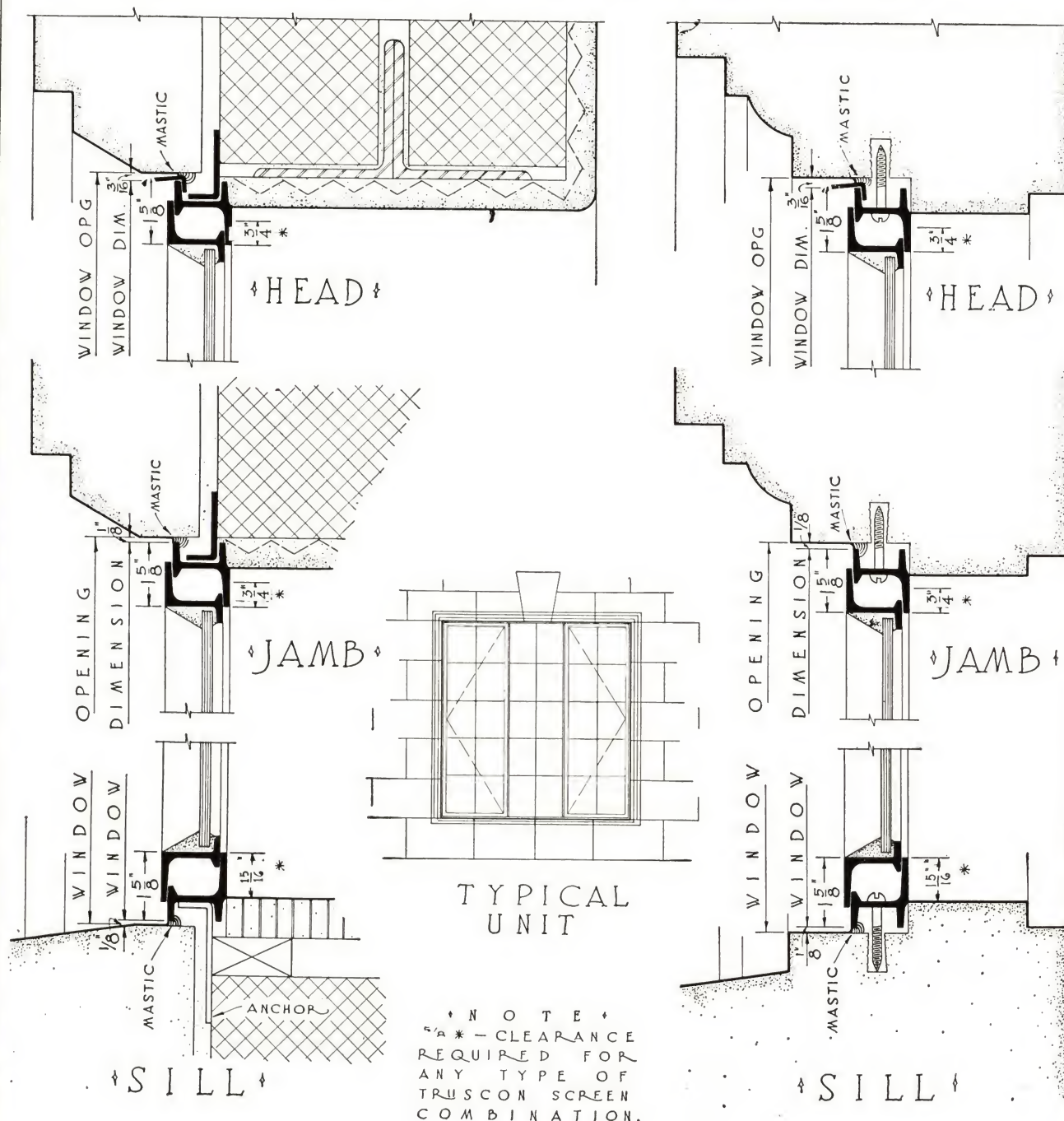


TRUSCON
STEEL COMPANY
Youngstown, Ohio

BRICK VENEER INSTALLATION DETAILS
ARCHITECTURAL STEEL CASEMENTS
SERIES 15

PLATE No.
CA-8
AUGUST, 1936

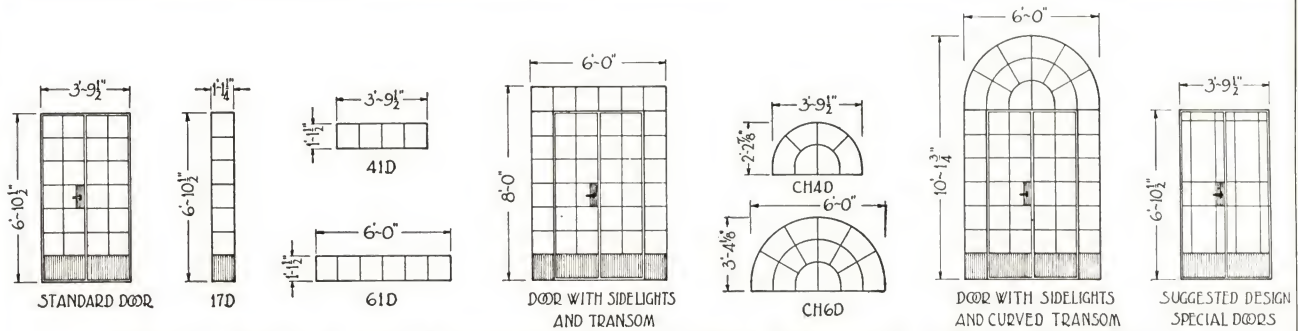
STONE DETAILS



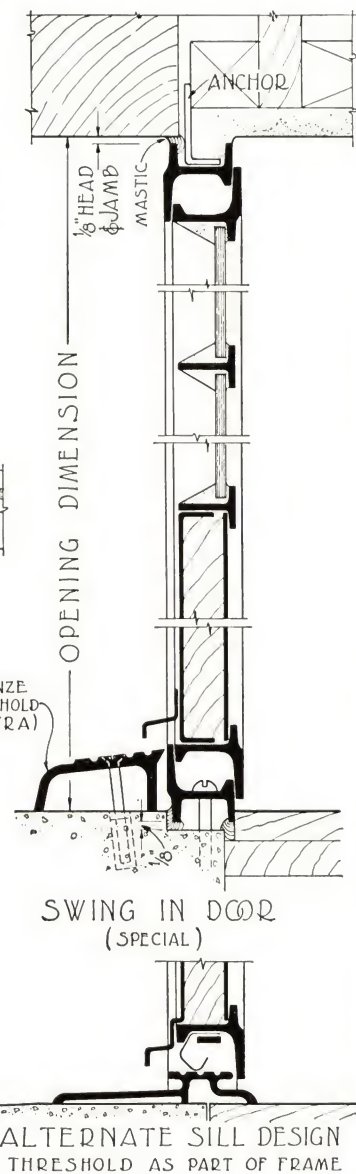
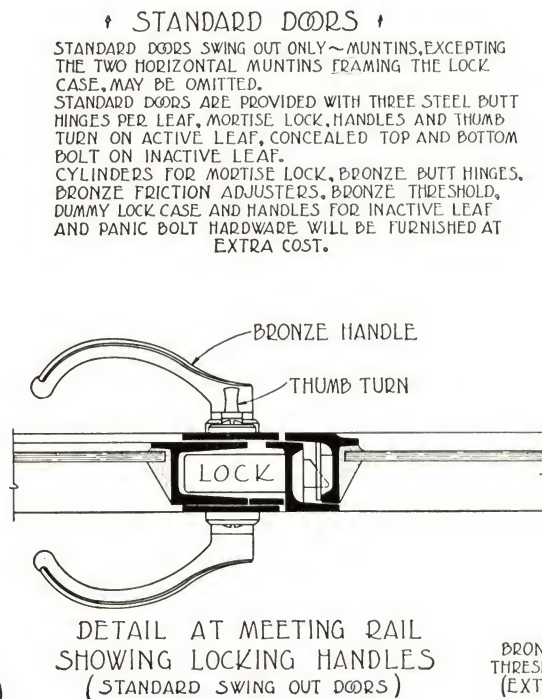
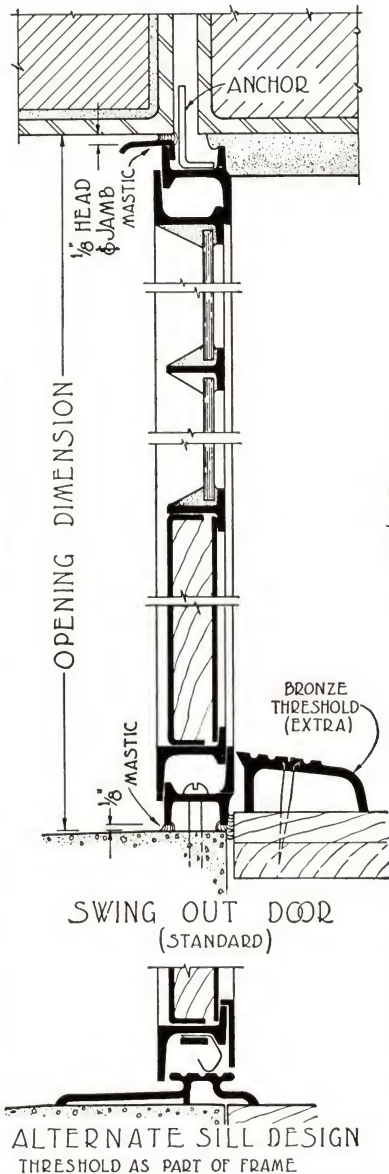
TRUSCON
STEEL COMPANY
Youngstown, Ohio

STONE INSTALLATION DETAILS
ARCHITECTURAL STEEL CASEMENTS
SERIES 15

PLATE No.
CA-9
OCTOBER, 1932



TYPICAL DESIGN AND ARRANGEMENT OF DOORS SIDELIGHTS AND TRANSOMS



SPECIAL DOORS
SPECIAL DOORS, TO SWING IN OR OUT, ARE BUILT IN ANY SIZE UP TO 5'-0" WIDE X 7'-6" HIGH (FOR DOUBLE DOORS) OF INTERMEDIATE WEIGHT SECTIONS AND UP TO 6'-0" WIDE X 8'-0" HIGH (FOR DOUBLE DOORS) OF HEAVY WEIGHT SECTIONS. SPECIAL DOORS MAY BE GLAZED INSIDE WITH GLAZING BEADS. THE SAME HARDWARE IS AVAILABLE FOR SPECIAL DOORS AS THAT SPECIFIED FOR STANDARD DOORS.

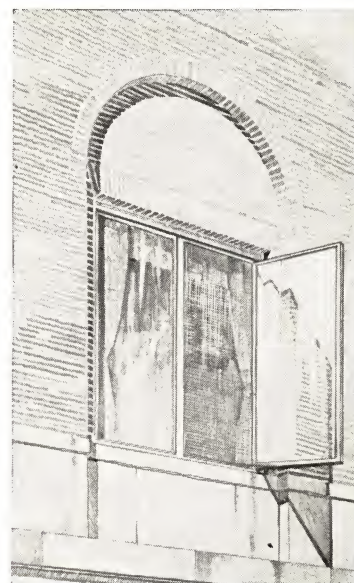
TRUSCON
STEEL COMPANY
Youngstown, Ohio

STANDARD DETAILS
ARCHITECTURAL CASEMENT DOORS
SERIES 15

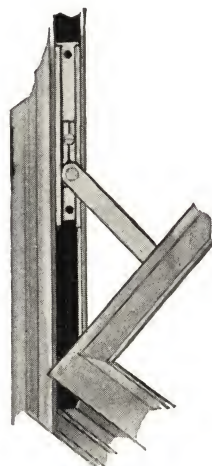
PLATE No.
CA-10
NOVEMBER, 1935

HARDWARE FOR CASEMENTS

Series 15, 15C, 15P and 25



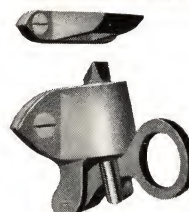
Worm and Gear Operator



Concealed Side Arm



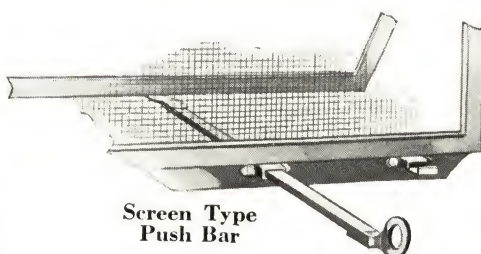
Screen Type Locking Handles



Transom Latch
Pole Operated



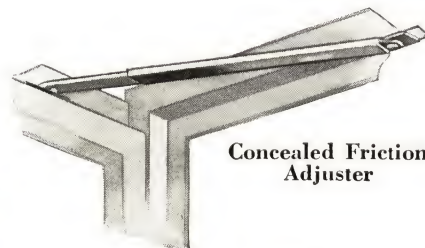
Transom Latch
Cord
Operated



Screen Type
Push Bar



Cremone
Bolt
Assembly
with Finger
Pull



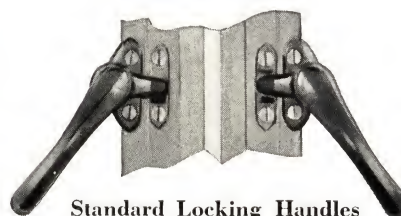
Concealed Friction
Adjuster



Butt Hinge



Extension Hinge

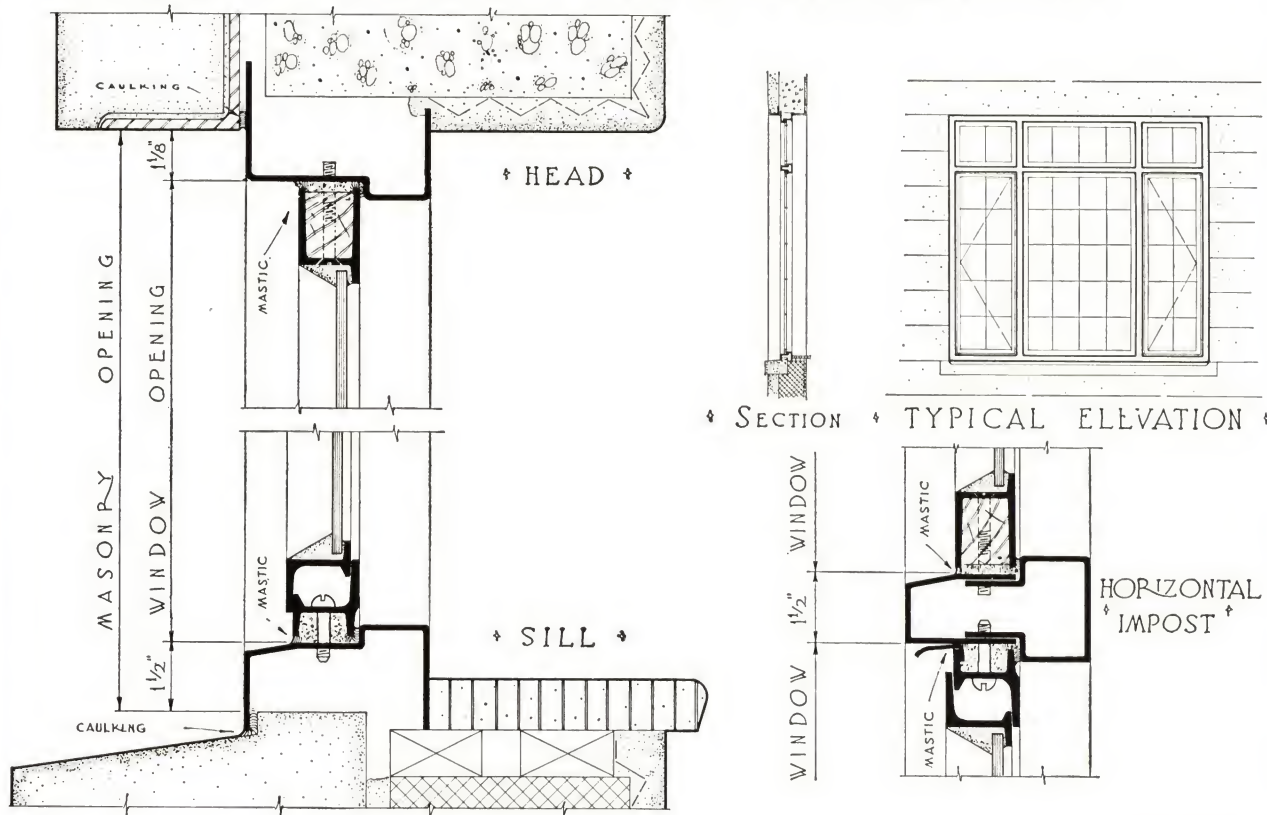


Standard Locking Handles



Double
Locking
Device

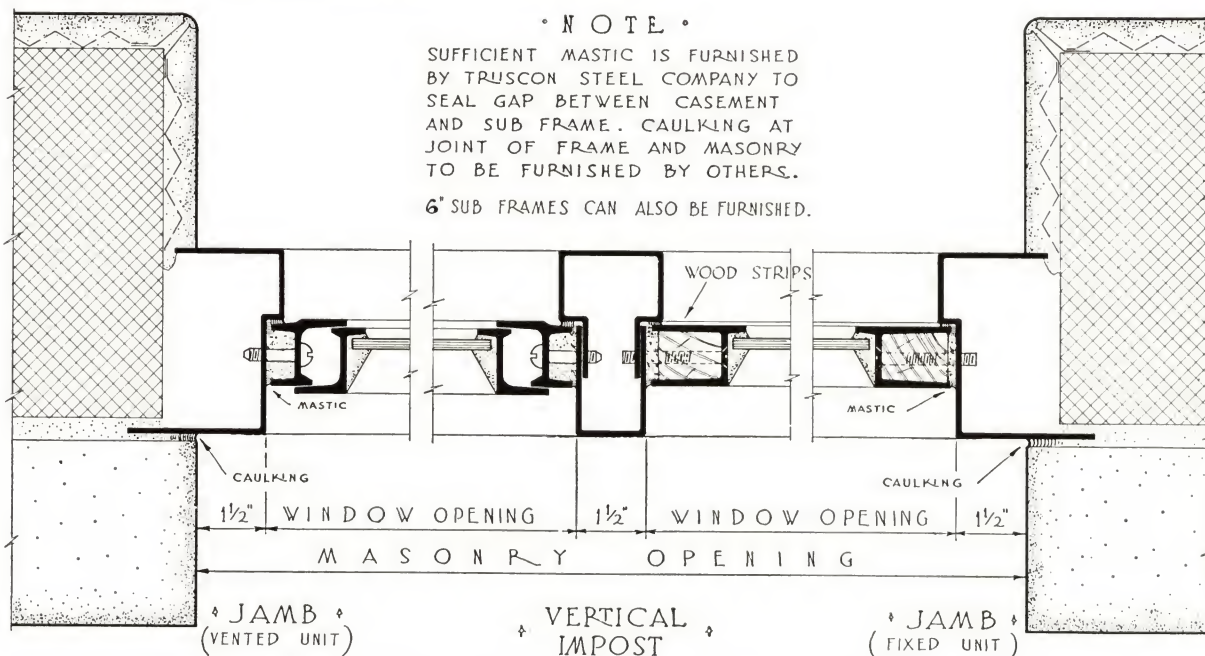
SUB - FRAME INSTALLATION



NOTE

SUFFICIENT MASTIC IS FURNISHED BY TRUSCON STEEL COMPANY TO SEAL GAP BETWEEN CASEMENT AND SUB FRAME. CAULKING AT JOINT OF FRAME AND MASONRY TO BE FURNISHED BY OTHERS.

6" SUB FRAMES CAN ALSO BE FURNISHED.

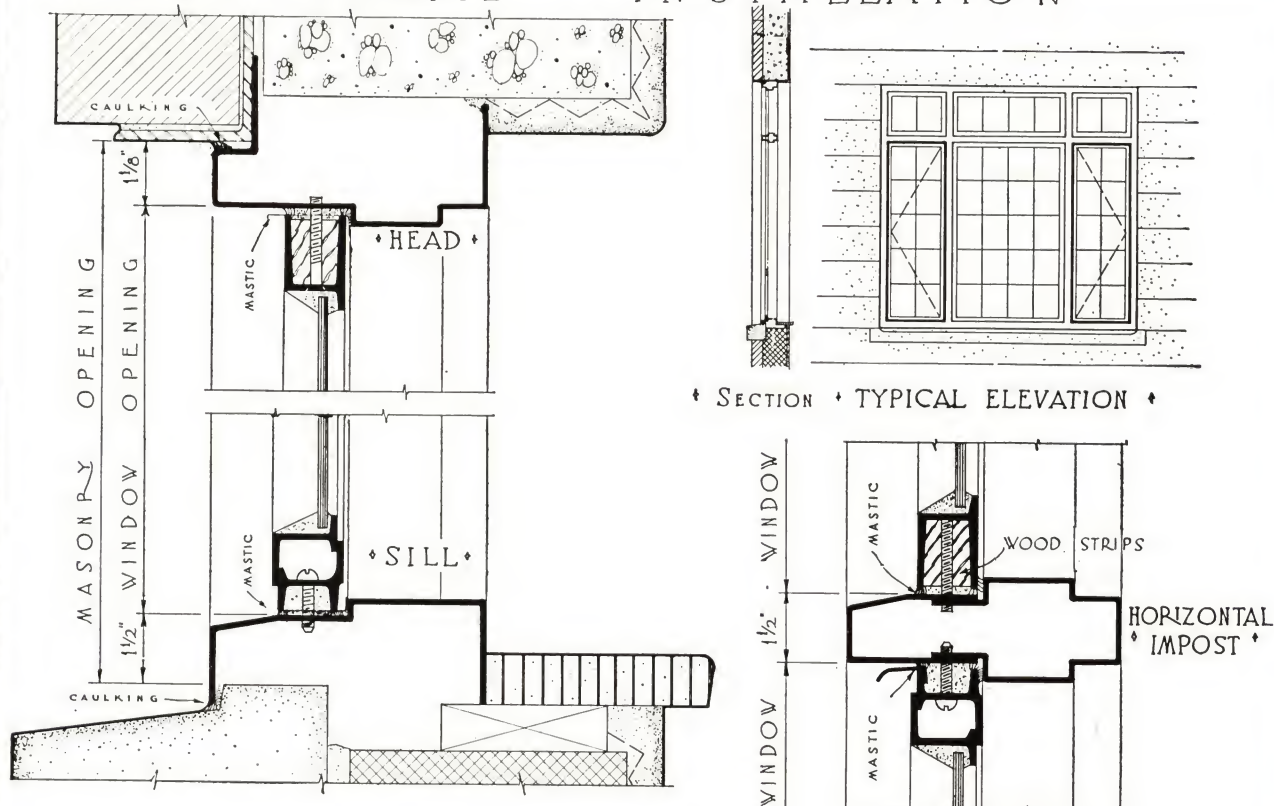


TRUSCON
STEEL COMPANY
Youngstown, Ohio

4" SUB-FRAME
SERIES 15, 15C AND 15P

PLATE No.
CA-6
OCTOBER, 1937

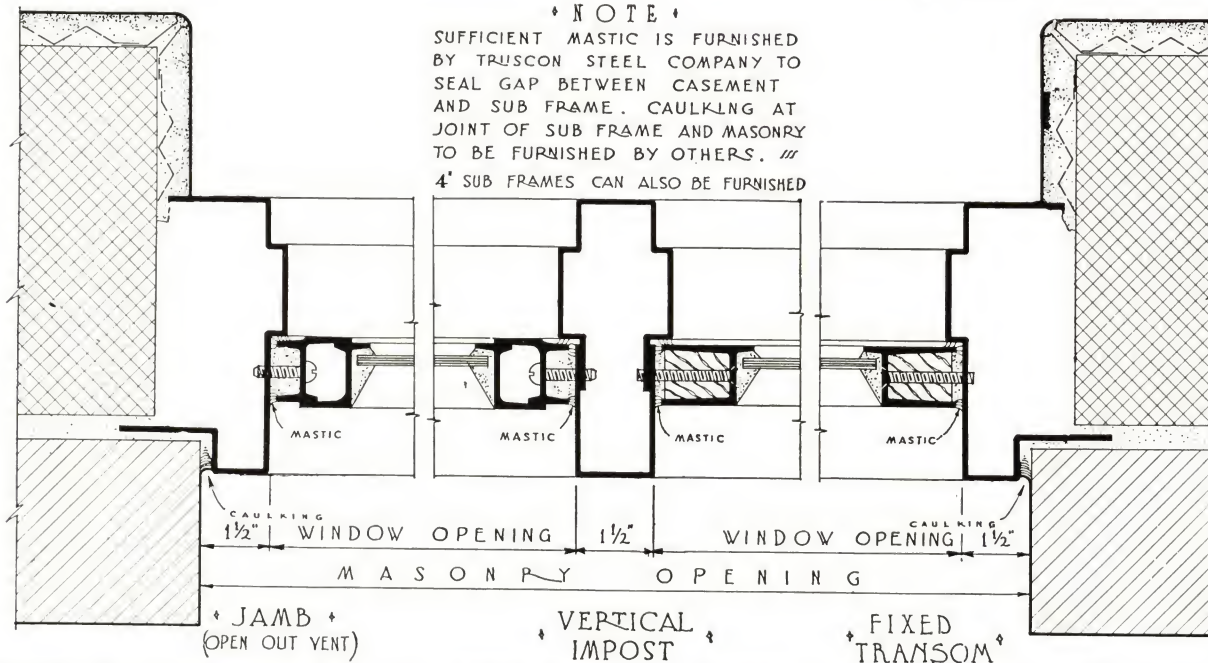
SUB - FRAME INSTALLATION



NOTE

SUFFICIENT MASTIC IS FURNISHED BY TRUSCON STEEL COMPANY TO SEAL GAP BETWEEN CASEMENT AND SUB FRAME. CAULKING AT JOINT OF SUB FRAME AND MASONRY TO BE FURNISHED BY OTHERS. //

4" SUB FRAMES CAN ALSO BE FURNISHED



TRUSCON
STEEL COMPANY
Youngstown, Ohio

6" SUB-FRAME
SERIES 15, 15C AND 15P

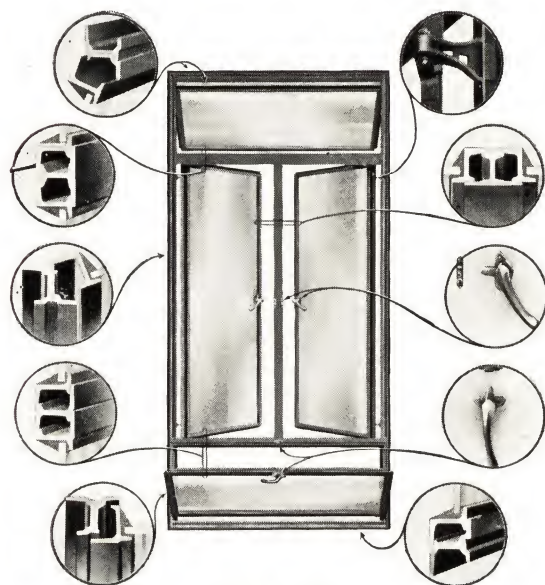
PLATE No.
CM-4
OCTOBER, 1937

MONUMENTAL WINDOWS

SERIES 15C AND 15P

MONUMENTAL Windows are suitable for use in hospitals, educational and public buildings, and other buildings of similar character. Their appearance is in complete harmony with

such buildings as they are constructed of intermediate casement sections, and employ casement hardware. They are extra heavy to withstand the constant usage encountered in such buildings.



Series 15C
Casement Type



Series 15P
Projected Type

Specifications on Page 35

		STANDARD WIDTHS				
		1'-6"	2'-6"	2'-6"	5'-0"	5'-0"
		1'-9"	3'-0"	3'-0"	5'-6"	5'-6"
		2'-0"	3'-6"	3'-6"	6'-0"	6'-0"
		2'-3"	4'-0"	4'-0"	6'-6"	6'-6"
		2'-6"	4'-6"	4'-6"	7'-0"	7'-0"
					7'-6"	7'-6"
STANDARD HEIGHTS	4'-6"					
	5'-0"					
	5'-6"					
	6'-0"					
	6'-6"					
	7'-0"					
	7'-6"					
STANDARD HEIGHTS	5'-6"					
	6'-0"					
	6'-6"					
	7'-0"					
	7'-6"					
	8'-0"					
	9'-0"					
NOTES						
FIXED UNITS ARE FURNISHED IN STANDARD WIDTHS FROM 1'-6" TO 4'-6" AND STANDARD HEIGHTS FROM 4'-6" TO 9'-0" ~ ALL CASEMENTS ARE VIEWED FROM OUTSIDE ~ HANDING OF CASEMENTS IS DETERMINED BY LOCATION OF HINGE ~ HINGED AT RIGHT IS A RIGHT HAND CASEMENT ~ HINGED AT LEFT IS A LEFT HAND CASEMENT ~ DIMENSIONS SHOWN ARE CLEAR OPENING DIMENSIONS ~ FRAME SECTION OF WINDOWS EXTENDS 3/8" BEYOND CLEAR OPENING FOR MASONRY ANCHORAGE ~ STANDARD SCREEN TYPE HARDWARE AND SCREENS ARE AVAILABLE FOR ALL TYPES OF VENTILATORS ~ CASEMENT VENTS MAY BE MADE TO SWING IN ~ ALL CASEMENTS ARE SET IN MASTIC CEMENT WHERE COMING IN CONTACT WITH MASONRY.						
TRUSCON STEEL COMPANY Youngstown, Ohio		TYPES AND SIZES MONUMENTAL STEEL WINDOWS CASEMENT TYPE - SERIES 15C			PLATE No. CM-1 OCTOBER, 1934	

STANDARD WIDTHS		NOTES	
1'-6"	4'-0"	DIMENSIONS SHOWN ARE CLEAR OPENING DIMENSIONS~FRAME SECTION OF WINDOWS EXTENDS BEYOND CLEAR OPENING 3/8" FOR MASONRY ANCHORAGE~ALL WIN- DOWS ARE SET IN MASTIC CEMENT WHERE COMING IN CONTACT WITH MASONRY~STANDARD SCREEN TYPE HARDWARE AND SCREENS ARE AVAILABLE FOR ALL TYPES OF VENTS.	
2'-0"	4'-6"		
2'-6"	5'-0"		
3'-0"	5'-6"		
3'-6"	6'-0"		
4'-0"	6'-6"		
4'-6"	7'-0"		
HEIGHTS			
1'-0", 1'-6"			
2'-0", 2'-6"			
3'-0", 3'-6"			
4'-0"			
STANDARD		STANDARD	WIDTHS
3'-0", 3'-6"		1'-6", 2'-0"	4'-0", 4'-6"
4'-0", 4'-6"		2'-6", 3'-0"	5'-0", 5'-6"
5'-0", 5'-6"		3'-6", 4'-0"	6'-0", 6'-6"
6'-0"		4'-6"	7'-0"
4'-6", 5'-0"			
5'-6", 6'-0"			
6'-6", 7'-0"			
STANDARD			
6'-6", 7'-0"			
7'-6", 8'-0"			
8'-6", 9'-0"			
FIXED UNITS ARE FURNISHED IN STANDARD WIDTHS FROM 1'-6" TO 4'-6" AND STANDARD HEIGHTS FROM 1'-0" TO 9'-0"~DIRECTION OF PROJECTION AND LOCATION OF VENTS MAY BE CHANGED AS DESIRED.			
TRUSCON STEEL COMPANY Youngstown, Ohio		TYPES AND SIZES MONUMENTAL STEEL WINDOWS PROJECTED TYPE—SERIES 15P	
		PLATE No. CM-2 OCTOBER, 1934	

SPECIFICATIONS (SERIES 15C AND 15P WINDOWS)

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be Truscon Monumental Windows, either case-ment type Series 15-C or projected type, Series 15-P, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—Truscon specification low carbon, new billet, hot-rolled, steel shall be used in the manufacture of all members.

3 Construction—All units shall be square and true, constructed of sections not less than $1\frac{7}{16}$ in. deep.

(a) The *Outside Frame* shall be an unequal leg section, designed for $\frac{5}{8}$ in. anchorage on the outside leg and continuous from head to sill and jamb to jamb and shaped for double flat contact weathering not less than $\frac{3}{8}$ in. between ventilators and frame members or rails. Outside Frame Section may also be equal leg section with continuous fins. Each corner of sash and frames shall be electrically butt welded rigid and tight and ground smooth before assembly. The ventilators and frame shall be made perfectly straight and true to insure perfect weathering and ease of operation.

(b) *Muntins*, where required, shall be a specially designed "T" bar section and shall be continuous between rails and stiles. At intersections there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted.

(c) All *Stiles, Rails, Frames and Muntins* shall be prepared for outside putty glazing with clips. (See note.)

(d) *Series 15C Side Hinged Ventilators* shall swing out unless otherwise specified and shall be equipped with Truscon design extension three-knuckle steel hinges having bronze bushing and bronze bearing washers and acorn head steel hinge bolt with acorn nut. Hinge design shall prevent removal of locked ventilator by taking out hinge bolt. On non-operator type ventilators, hinges shall be friction type. On operator type ventilators, hinges shall be free swinging. Series 15C transom and sill ventilators shall be of the projecting type. A continuous drip shall be provided on transom bars of all standard swing leaf combinations, or at the head where ventilators extend full height of the opening.

(e) *Series 15P Ventilators* shall be of the projecting type opening down and outward or up and inward as indicated. Each ventilator shall be balanced on two $\frac{3}{16} \times 1$ in. high carbon steel supporting arms attached to frame and ventilator by special shoulder rivets having a bronze flange bushing. Each ventilator shall be equipped with vertical sliding brass friction shoe at each jamb.

4 Hardware—(a) All *Hardware* shall be bronze medium statuary finish.

NON-OPERATOR TYPE

(b) For *Side Hinged Ventilators* up to and including 5 ft. in height, a bronze cam acting locking handle and bronze strike shall be furnished.

For *Side Hinged Ventilators* over 5 ft. in height or when center line of ventilator is 6 ft. 3 in. or more

from the floor, bronze double locking device and bronze strikes shall be furnished.

For *Double Vented Units* with clear opening (no meeting rail), bronze cremone bolt hardware shall be furnished.

(c) For *Projected Ventilators* a bronze cam acting locking handle and, where necessary, a bronze pole ring shall be furnished as standard. Where desired and specified, bronze spring latch, either pole or cord operated, shall be furnished.

OPERATOR TYPE

(d) *Operator type hardware* shall control ventilator independently of the screen. Underscreen operator shall hold the ventilator securely in open position.

(e) For *side hinged ventilators* solid bronze concealed latch locking handle and worm drive underscreen operator shall be furnished. (Locking handle keeper and channel guide for operator shall be attached in the shop.) Concealed latch locking handle shall have both cam action and kick out action. (For ventilators over 5 ft. 0 in. in height, a double concealed latch locking device shall be furnished.) Worm drive underscreen operator shall have $\frac{3}{4}$ in. diameter worm and operator arm with machine cut teeth. Case and crank shall be solid bronze, arm is cadmium plated steel.

(f) *Standard screen type hardware for down and outward projecting ventilators* shall consist of heavy bronze push arm operating through the frame or intermediate bar sections.

5 Painting—(a) Windows shall be given one prime coat of grey mineral paint at factory before shipment.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

6 Erection—(a) *Each unit* shall be set plumb and true in the opening, securely wedged and held in alignment during construction.

After windows have been placed in opening and before they are glazed, the ventilator shall be carefully adjusted.

(b) *Mastic* in sufficient quantity shall be used in setting and bedding frames where they come in contact with mullions or wall construction.

7 Glazing—(To be done by glazing contractor.) All windows shall be glazed on the outside with glazing clips (see note).

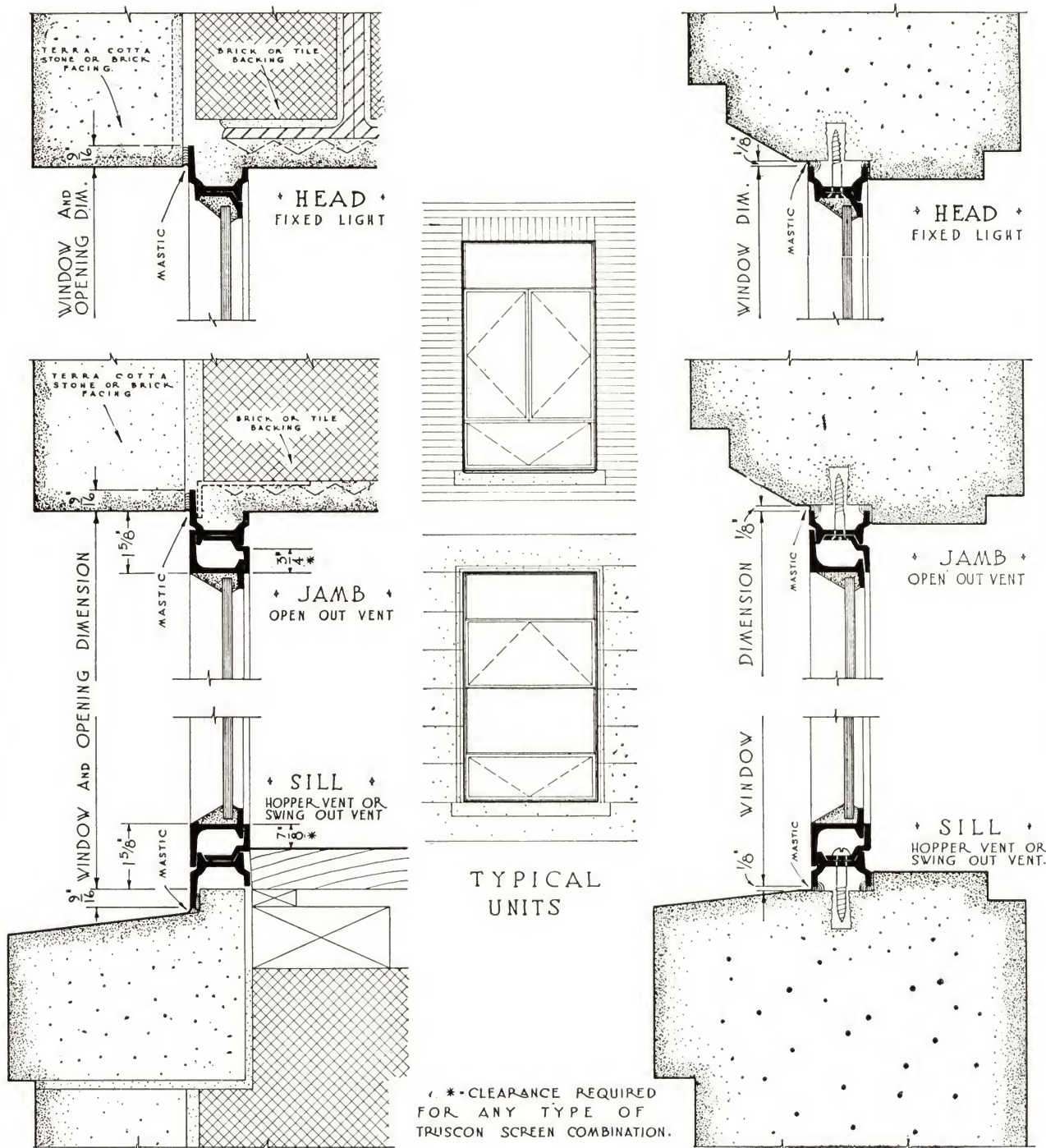
Notes: Windows may be inside bead glazed with solid section, hot-rolled glazing beads if desired and so specified.

When specified, Series 15C Monumental Casements can be furnished to "open in."

UNDERWRITERS' LABEL

Underwriters' Label of approval may be specified for sizes not exceeding 5 ft. 0 in. in width and 10 ft. 0 in. in height. Mullions not permitted. Side hinged (outswing only) ventilators limited to 2 ft. 6 in. wide and 6 ft. 0 in. high and other ventilators 5 ft. 0 in. wide and 2 ft. 6 in. high. Outside putty glazed individual lights are limited to 350 sq. in., exposed area, and 155 sq. in., exposed area, if inside bead glazing is used.

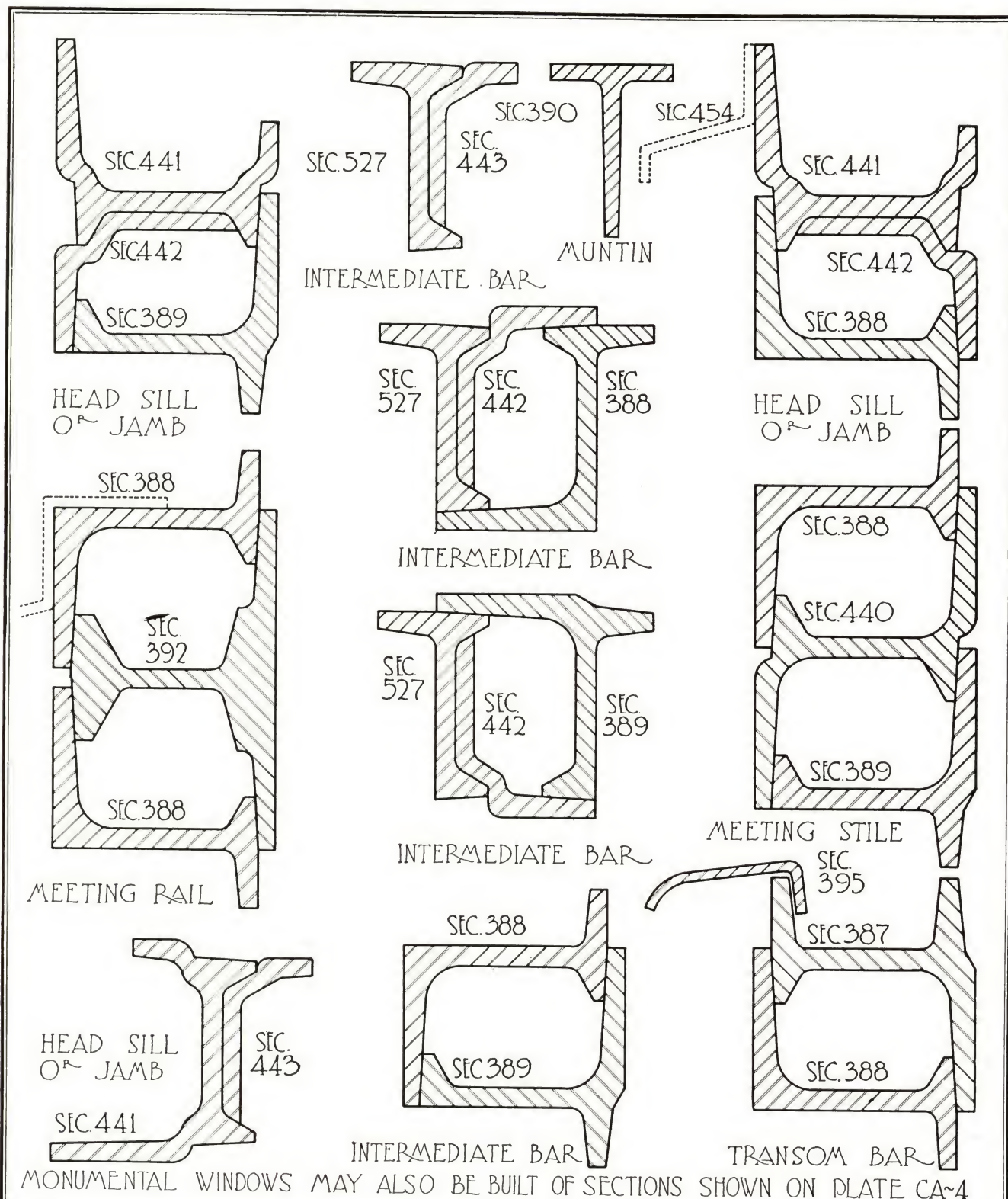
SOLID MASONRY CONSTRUCTION



TRUSCON
STEEL COMPANY
Youngstown, Ohio

MASONRY INSTALLATION
MONUMENTAL STEEL WINDOWS
CASEMENT AND PROJECTED TYPES (SERIES 15C AND 15P)

PLATE No.
CM-5
NOVEMBER, 1934



TRUSCON STEEL COMPANY Youngstown, Ohio	FULL SIZE SECTIONS MONUMENTAL STEEL WINDOWS CASEMENT AND PROJECTED TYPES (Series 15C and 15P)	PLATE No. CM-3 OCTOBER, 1937
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PARAMOUNT CASEMENTS SERIES 25

WHERE architectural treatment and ventilation require exceptionally large swing leaves, Paramount Casements, Series 25, will meet the most exacting architectural specifications.

SPECIFICATIONS

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be Paramount Casement Windows, Series 25, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Construction—(a) Windows shall be custom made and of type, size and design to swing either in or out, as shown on the drawing.

(b) *Major Members* shall be not less than 1½ in. in depth and shall be hot-rolled from new billet steel. The combined weight of frame and swing leaf members shall be not less than 4 lbs. per linear foot.

(c) *All Corners* of swing leaves and frames shall be mitered and electrically butt welded and all exposed surfaces ground smooth. Double contact of not less than ⅜ in. shall be provided for weathering on all windows where swing leaves contact frame members.

3 Hardware—(a) *Unattached Hardware* shall be solid bronze, Medium Statuary finish of Truscon standard design. Standard screen type hardware shall be furnished and windows prepared for same when so specified (*illustrated on page 31*). Unattached hardware shall be packed separately and shipped with windows.

(b) *Swing Leaves* shall be provided with standard extension cleaning hinges, either friction or free swinging types; or with butt hinges, at the option of the architect. All hinges are so designed as to have 100% bronze to steel contact on all pivot points. Windows shall be provided for friction or stay-bar adjuster where free swinging hinges are specified.

4 Painting—(a) Windows after fabrication shall be given one protective coat of standard Truscon paint.

(b) Windows shall be BONDORIZED before painting. (Optional at slight extra cost.)

5 Erection—(a) All windows shall be set plumb and true in their respective openings and properly adjusted.

(b) Mastic in sufficient quantity shall be used in setting and bedding frames when they come in contact with mullions or wall construction.

All hardware shall be applied in accordance with manufacturer's instructions. (It is recommended that the manufacturer shall erect and adjust the windows.

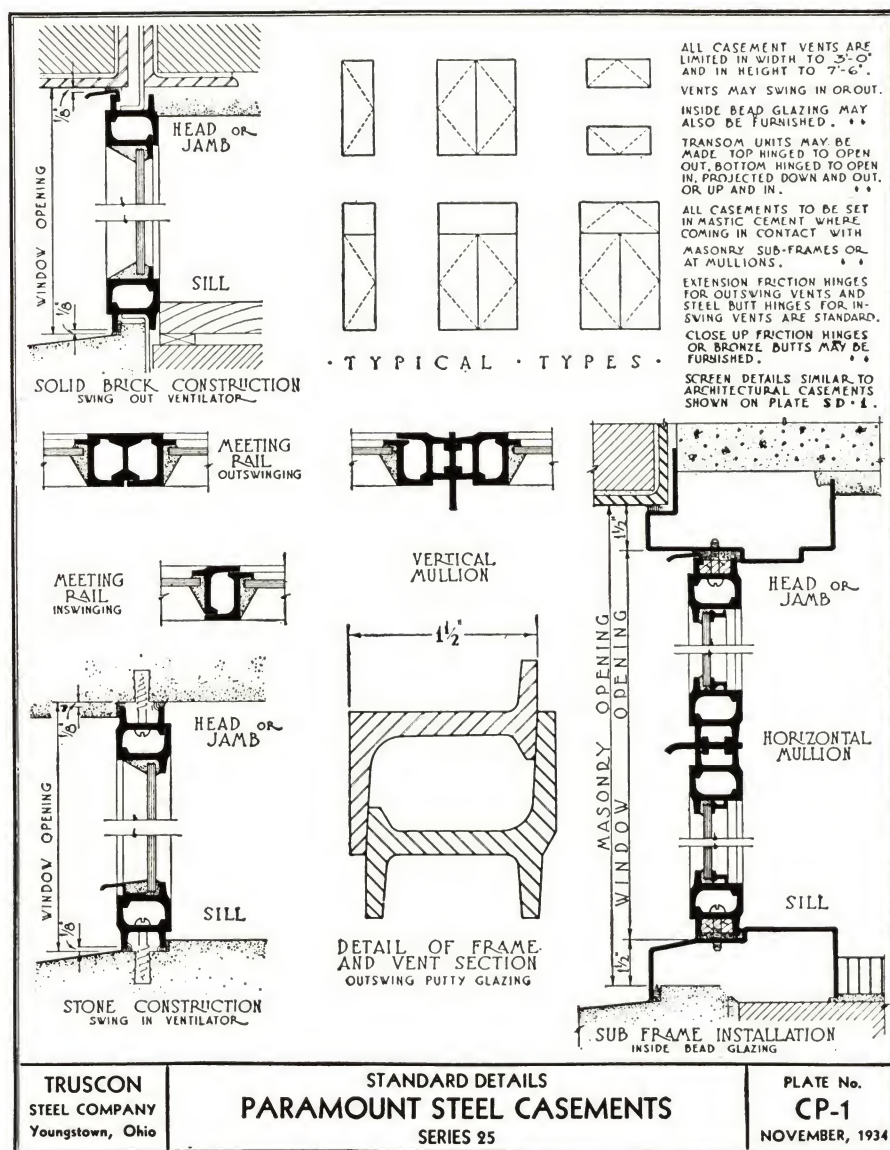
The Erection Division of the TRUSCON STEEL COMPANY will contract to furnish this service.)

Frame members of windows shall be so designed that they can be readily installed in Truscon standard design steel sub frames erected by others. Frame members shall also be prepared to accept standard fins so that windows may be built-in with the construction.

6 Glazing—(To be done by glazing contractor.) Windows shall be furnished with glazing clips for outside putty glazing. When specified, windows shall be fitted with a solid moulded steel glazing stop for inside glazing. Glazing stops shall be carefully fitted to each light and attached with bronze screws.

UNDERWRITERS' LABEL

Underwriters' Label of approval may be specified for sizes not exceeding 5 ft. 0 in. in width and 10 ft. 0 in. in height. Mullions not permitted. Side hinged (outswing only) ventilators limited to 2 ft. 6 in. wide and 6 ft. 0 in. high and other ventilators 5 ft. 0 in. wide and 2 ft. 6 in. high. Outside putty glazed individual lights are limited to 350 sq. in., exposed area, and 155 sq. in. exposed area if inside bead glazing is used.



PROJECTED WINDOWS ARCHITECTURAL TYPE

DESIGNED for appearance as well as practicality. The architect has a wide range of types to choose from, thereby enabling him to use standard types and take advantage of their economy.

The outside frame is a solid heavy channel, giving great strength. Rigidity in the ventilator is secured by the use of a heavy solid angle section mortised and tenoned and also welded at the corners. The ventilator frame is rolled with integral baffle, similar in design used on highest quality casements.

Solid bronze hardware is standard for these windows and the quality and design are in keeping with the word "Architectural."

Windows with inside glazing angles are standard. Windows arranged for outside glazing with putty can be furnished at a saving in cost. Projecting ventilators permit easy cleaning from the inside. Weather-tightness is assured by the rigid construction of the window and the Truscon double contact weathering.

Screens and underscreen operating hardware are available for all ventilators.



SPECIFICATIONS

General

1. All windows so indicated on the plans and elevations and called for in these specifications shall be the Architectural Projected Type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

Material and Construction

2. All members shall be constructed from Truscon specifications, hot rolled, new billet steel.

3. All joints shall be mortised and tenoned, and air hammer riveted, and in addition all ventilator corners and frame corners shall be welded.

4. The intersection of horizontal and vertical muntins shall have a dovetail mitre, rigidly interlocking the bars.

5. No excess metal or projecting surfaces shall be permitted where muntin bars intersect.

6. Muntin bars, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.

7. The members of the windows shall not be bent or deformed during process of manufacture.

8. Double contact weathering shall be provided on all four sides of the ventilator.

9. The outside section of the window shall be a heavy, solid rolled steel channel.

10. Uniform tension to hold ventilator in any desired position shall be obtained by a sliding friction shoe.

11. The sliding friction shoe shall be constructed of forged brass with compression spring enclosed in steel tubing.

12. The side of the window frame shall act as a guide for the sliding friction shoe.

13. There shall be two heavy supporting arms attached to the ventilator and frame, designed to be concealed when ventilator is closed. The rivet holes in supporting arms shall have brass flanged bushings.

Outward Projecting or Inward Projecting Ventilators

14. Outward projecting ventilators when opened shall have no part of the ventilator extending inside the normal plane of the window.

15. Inward projecting ventilators shall not extend outside the normal plane of the window.

Vertical Mullions

16. Where two or more window units, less than 6 ft. 0 in. in height are used in the same opening, they shall be connected together with Truscon Standard Plate Mullions (Type T-1).

PROJECTED WINDOWS Architectural Type
SPECIFICATIONS (Continued)

17. For windows over 6 ft. 0 in. high, and up to and including 10 ft. 0 in. high, Truscon Standard T-Bar Mullions (Type T-2) shall be used.

18. For all window openings over 10 ft. 0 in. high, Truscon Standard Double T-Bar Mullions (Type T-3) shall be used.

19. All mullions shall be 2½ in. wide (2 in. mullion distance) with slotted holes to allow for adjustment.

20. Mullions shall extend 1⅛ in. below the leg of window at sill to provide a firm anchorage in sill construction.

21. All mullions shall have standard Truscon interior mullion covers.

Unattached Hardware

22. All hardware shall be solid bronze.

23. All outward projecting ventilators within reach of the floor, shall be equipped with a solid bronze cam handle and strike.

24. All outward projecting ventilators not easily accessible, shall be equipped with solid bronze cam handle, (ring type), strike and pole hook ring.

25. All inward projecting ventilators shall be equipped with solid bronze cam handle and keeper.

Underscreen Hardware

(When Underscreen Hardware is required instead of standard hardware for outward projecting ventilators, the following specification applies):

26. Underscreen Push Bar operating through the window section shall open and close the ventilator without moving the screen. Underscreen Push Bar shall have cam locking action to draw ventilator tight when closed.

Shade Bracket Clips

(Include only when required.)

27. Shade bracket clips shall be pressed steel, located at upper corners of frame. Two slotted holes for attachment of shade brackets shall be provided 1¼ in. on centers. Shade brackets to be furnished by shade contractor.

Structural Support

28. All structural work for the support of steel windows shall be provided by another contractor.

Shop Painting

29. (a) All window units shall be given a dip coat of protective paint before shipment.

(b) Windows shall be BONDORIZED before painting. (Optional at slight extra cost.)

Erection

30. Window units shall be trued in all directions and set plumb in the masonry.

31. In setting windows, wooden wedges to hold unit in place must be located so as not to cause bulging or distortion.

32. After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

33. The erection of the windows shall be performed by the manufacturer of same.

Glazing

(To be done by glazing contractor.)

Architect to specify either one of the following methods of glazing:

Specification for Angle Glazing

34. All windows shall be glazed on the INSIDE. Glass shall be bedded in steel window putty and held in place with continuous glazing angles attached to the window with brass screws.

Specification for Spring Clip Glazing

35. All windows shall be glazed on the OUTSIDE. Glass shall be bed and face puttied and held in place by Truscon copper clad wire glazing clips.

Screens

36. Screens shall be of the following types:

(a) Fixed screen on outside of inward projecting ventilators.

(b) Top hinged screen for outward projecting ventilators with standard hardware.

(c) Fixed screen for use with underscreen push bar for outward projecting ventilators.

37. Screens shall have rewirable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Frames shall be given one standard coat baked enamel for inside screens and two coats for outside screens.

Underwriters' Label

(National Board of Fire Underwriters)

38. Underwriter's label of approval may be specified for sizes not exceeding 7 ft. 0 in. in width by 12 ft. 0 in. in height. One or more vertical mullions may be used. Special horizontal mullions may be used, provided opening width is not greater than 14 ft. 0 in. *Windows must be inside angle glazed.* Individual glass lights shall not exceed 350 sq. in. exposed area, 54 in. in height or 48 in. in width.

TYPES AND SIZES

GLASS SIZES

16 1/2	19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
16 1/2	19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

GLASS SIZES

19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2
19 1/2	22 1/2	25 1/2	28 1/2	31 1/2	34 1/2

STANDARD WIDTHS (OPENING DIMENSIONS)

2'-0"	22 1/4"
2'-6"	28 1/4"
3'-0"	34 1/4"
3'-6"	40 1/4"



A



B



C



D



E



F



G



H



I



J



K



L



M



N



O



A



B



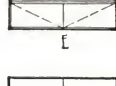
C



D



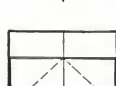
E



F



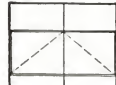
G



H



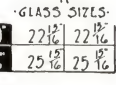
I



J



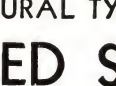
K



L



M



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O



I



J



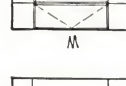
K



L



M



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O



P



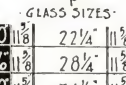
Q



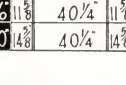
R



S



T



U



V



W

SYMBOLS



DOWN & OUT

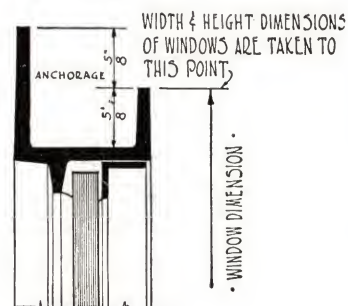


UP & IN

STANDARD WINDOW UNITS MAY BE COMBINED WITH MULLIONS SHOWN ON PLATE NO. 23. ADD 2" TO BAY OPENING WIDTH FOR EACH MULLION USED.

WINDOWS CAN BE FURNISHED WITH GLAZING ANGLES FOR INSIDE GLAZING OR CAN BE FURNISHED FOR PUTTY GLAZING INSIDE OR OUTSIDE.

GLASS SIZES SHOWN ARE FOR FIXED LIGHTS - VENTILATOR GLASS IS CUT 1" SMALLER AT ALL EDGES



WIDTHS

	3'0"	3'6"	4'0"	4'6"	5'0"
4'6"	D	D	L	L	L
5'0"	E	E	M	M	M
5'6"	E	E	M	M	M
6'0"	E	E	M	M	M
6'6"	F	F	N	N	N
7'0"	F	F	N	N	N
7'6"	F	F	N	N	N
8'0"	F	F	N	N	N
8'6"	F	F	N	N	N
9'0"	H	H	P	P	P

The above schedule shows standard types. All other types are listed specials.

HEIGHTS

GLASS SIZES

4'-0"	22 1/4"	22 1/2"
4'-6"	28 1/4"	28 1/2"
5'-0"	34 1/4"	34 1/2"
5'-6"	40 1/4"	40 1/2"
6'-0"	46 1/4"	46 1/2"

TRUSCON
STEEL COMPANY
Youngstown, Ohio

ARCHITECTURAL TYPE » » TYPES AND SIZES
PROJECTED STEEL WINDOWS

PLATE No.
B-21
APRIL, 1936

PROJECTED WINDOWS COMMERCIAL TYPE

WHERE neat design and economy are the keynote of the construction, architects will appreciate the quality, appearance, performance and low cost of these windows.

They are widely used in buildings where low cost is essential. The projected feature is especially valuable when ventilation depends upon the natural clearing off of vapor, smoke and stale air. The tilted ventilator acts as a deflector of the elements and can be kept open in all kinds of weather. Direct drafts are eliminated and a continuous change of air is obtained. Projecting ventilators make possible ready cleaning from the inside.

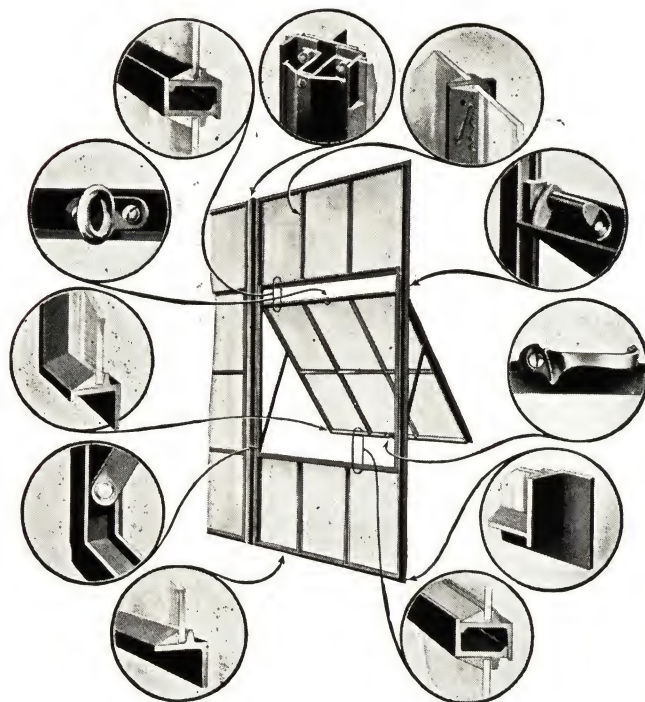
Because of the similarity between the appearance of the Commercial Projected and Pivoted Windows, the Projected Windows can be used in the office section of an industrial plant with complete conformity to the general design.

Thirty-two standard types of Commercial Projected Windows, as shown on page 45, are available in 12x18 in. or 14x20 in. glass size, many of which are carried in warehouse stocks.

SCREENS

Ventilators projecting inwardly with fixed flat screens on outside are the most practicable and economical.

However, top hinged screens can be furnished for ventilators projecting outwardly or fixed screens can be used in connection with under-screen push bar hardware.



EXPLOSION HARDWARE

Explosion type hardware conforming to specifications of Associated Factory Mutual Fire Insurance Companies can be furnished at increased cost over standard hardware for outwardly opening projected ventilators. This hardware operated either by pole or chain allows the ventilator to open automatically in case of explosion.

SPECIFICATIONS

General

1. All windows so indicated on the plans and elevations and called for in these specifications shall be the Commercial Projected Type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitutions shall be made without the written approval of the architect.

Material and Construction

2. All members shall be constructed from Truscon specification, hot-rolled, new billet steel.
3. All joints shall be mortised and tenoned, and air hammer riveted.
4. The intersection of horizontal and vertical muntins shall have a dovetail mitre, rigidly interlocking the bars.
5. No excess metal or projecting surfaces shall be permitted where muntin bars intersect.
6. Muntin bars, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.
7. The members of the windows shall not be bent or deformed during process of manufacture.

8. Double contact weathering shall be provided on all four sides of the ventilator.
9. Uniform tension to hold ventilator in any desired position shall be obtained by a sliding friction shoe.
10. The sliding friction shoe shall be constructed of forged brass with compression spring enclosed in steel tubing.
11. The side of the window frame shall act as a guide for the sliding friction shoe.
12. There shall be two heavy supporting arms attached to the ventilator and frame, designed to be concealed when ventilator is closed. The rivet holes in supporting arms shall have brass flanged bushings.

Outward Projecting or Inward Projecting Ventilators

13. Outward Projecting Ventilators when open shall have no part of the ventilator extending inside the normal plane of the window.
14. Inward Projecting Ventilators shall not extend outside the normal plane of the window.

PROJECTED WINDOWS, Commercial Type**SPECIFICATIONS (Continued)****Vertical Mullions**

15. Where two or more window units, less than 6 ft. 3 in. in height, are used in the same opening, they shall be connected with Truscon Standard Plate Mullions (Type T-1).

16. For window units over 6 ft. 3 in. high and up to and including 10 ft. 3 1/8 in. high, Truscon Standard T-Bar Mullions (Type T-2) shall be used.

17. For all window openings over 10 ft. 3 1/8 in. high Truscon Standard Double T-Bar Mullions (Type T-3) shall be used.

18. All mullions shall be 2 1/2 in. wide (2 in. mullion distance) with slotted holes to allow for adjustment.

19. Mullions shall extend 1 3/8 in. below the leg of window at sill to provide a firm anchorage in sill construction.

Pressed steel mullion covers for interior use are available at extra cost.

Unattached Hardware

20. All hardware shall be malleable iron, cadmium plated, unless otherwise specified.

21. All outward projecting ventilators within reach of the floor, shall be equipped with a malleable iron cam handle.

22. All outward projecting ventilators not easily accessible, shall be equipped with malleable iron cam handle and pole hook ring.

(Truscon automatic chain operated latch may be substituted for cam latch pole hook where so required.)

23. All inward projecting ventilators shall be equipped with spring latch and keeper.

Underscreen Hardware

(When Underscreen Hardware is required instead of standard hardware for outward projecting ventilators, the following specification applies):

24. Underscreen Push Bar operating through the window section shall open and close the ventilator without moving the screen. Underscreen Push Bar shall have cam locking action to draw ventilator tight when closed.

Explosion Type Hardware

(When Explosion Type Hardware is required instead of standard hardware for outward projecting ventilators, the following specification applies):

25. Explosion Type Hardware shall conform to specifications of Associated Factory Mutual Fire Insurance Companies. Hardware shall be designed for hand, pole or chain operation. *(State which type is desired).*

Shade Bracket Clips

(Include only when required).

26. Shade bracket clips shall be pressed steel, located at upper corners of frame. Two slotted holes for attachment of shade brackets shall be provided 1 1/4 in. on centers. Shade brackets to be furnished by shade contractor.

Mechanical Operator

(Include only when required).

27. All runs of ventilators, shown on drawings as "mechanically controlled," shall be equipped with rack and pinion operator, as manufactured by the TRUSCON STEEL COMPANY.

Structural Support

28. All structural work for the support of steel windows and mechanical operators shall be provided by another contractor.

Shop Painting

29. (a) All window units shall be given a dip coat of protective paint before shipment.

(b) Windows shall be BONDERIZED before painting. *(Optional at slight extra cost.)*

Erection

30. Window units shall be trued in all directions and set plumb in the masonry.

31. In setting windows, wooden wedges to hold unit in place must be located so as not to cause bulging or distortion.

32. After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

Glazing

(To be done by glazing contractor)

33. All standard windows shall be glazed on the inside.

34. Glass shall be held in place by Truscon copper clad steel wire glazing clips, four per light.

35. Glass shall be bed and face puttied with steel window putty.

Screens

36. Screens shall be of the following types:

(a) Fixed screen on outside of inward projecting ventilators.

(b) Top hinged screen for outward projecting ventilators with standard hardware.

(c) Fixed screen for use with underscreen push bar for outward projecting ventilators.

37. Screens shall have rewirable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Frames shall be given one standard coat baked enamel for inside screens and two coats for outside screens.

Underwriters' Label

(National Board of Fire Underwriters).

38. Underwriter's label of approval may be specified for sizes not exceeding 7 ft. 0 in. in width by 12 ft. 0 in. in height. One or more vertical mullions may be used. Special horizontal mullions may be used, provided opening width is not greater than 14 ft. 0 in. *Windows must be inside angle glazed.* Individual glass lights shall not exceed 350 sq. in. exposed area, 54 in. in height or 48 in. in width.

PIVOTED WINDOWS

ADAPTABLE to all types of industrial and manufacturing buildings including warehouse, factory and storage buildings, garages, filling stations, etc., and especially desirable when a great deal of light is needed. The slender but strong and rigid steel muntin bars admit the maximum of light to the interior. They are permanent, fireproof, never stick or warp and open or close easily regardless of climatic conditions.

SPECIFICATIONS

General

1. All windows so indicated on the plans and elevations and called for in these specifications shall be the Horizontally Pivoted type as manufactured by the TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitutions shall be made without the written approval of the architect.

Material and Construction

2. All members shall be constructed from Truscon specification, hot-rolled, new billet steel.
3. All joints shall be mortised and tenoned, and air hammer riveted.
4. The intersection of horizontal and vertical muntins shall have a dovetail mitre, rigidly interlocking the bars.
5. No excess metal or projecting surfaces shall be permitted where muntin bars intersect.
6. Muntin bars, except where ventilators occur, shall be continuous from head to sill and from jamb to jamb.
7. The members of the windows shall not be bent or deformed during process of manufacture.
8. Double contact weathering shall be provided on all four sides of the ventilator.
9. Unless otherwise specified the ventilators shall be horizontally pivoted 2 in. above the center line.
10. The pivots shall be solid steel securely welded to the ventilator and side bar of window, and equipped with $\frac{3}{8}$ in. steel removable pins held in place with washers and cotter pins.
11. Top and bottom rails of ventilators shall be cambered in shop before being fitted to windows, so, when closed, the corners shall engage first, allowing the ventilator to be evenly drawn up to the weather-tight bearing by means of standard locking device.

Vertical Mullions

12. Where two or more window units, less than 6 ft. 3 in. in height, are used in the same opening, they shall be connected with Truscon Standard Plate Mullions (Type T-1).
13. For window units over 6 ft. 3 in. high, and up to and including 10 ft. $3\frac{1}{8}$ in. high, Truscon Standard T-Bar Mullions (Type T-2) shall be used.
14. For all window openings over 10 ft. $3\frac{1}{8}$ in. high, Truscon Standard Double T-Bar Mullions (Type T-3) shall be used.
15. All mullions shall be $2\frac{1}{2}$ in. wide (2 in. mullion distance) with slotted holes to allow for adjustment.
16. Mullions shall extend $1\frac{3}{8}$ in. below the leg of window at sill to provide a firm anchorage in sill construction.

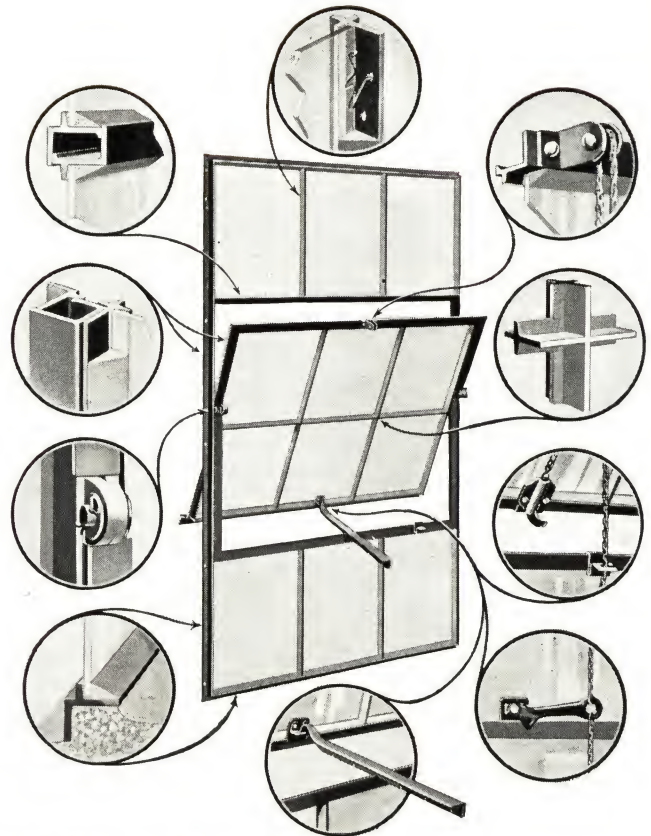
Unattached Hardware

17. All ventilators shall be equipped with either push bar, gravity cam latch or spring latch and chain, as marked on drawings or as hereinafter specifically called for; all iron and steel hardware except push bars shall be cadmium plated before shipment. Push bars are painted.
- (Schedule of proper hardware for windows to be inserted here.)

Mechanical Operator

18. All runs of ventilators, shown on drawings as "mechanically controlled", shall be equipped with worm and gear or with rack and pinion operator, as manufactured by the TRUSCON STEEL COMPANY.

(Insert specifications for proper type of mechanical operator.)



Structural Support

19. All structural work for the support of steel windows and operators shall be provided by another contractor.

Shop Painting

20. (a) All window units shall be given a dip coat of protective paint before shipment.
- (b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

Erection

21. Window units shall be trued in all directions and set plumb in the masonry.
22. In setting windows, wooden wedges to hold unit in place must be located so as not to cause bulging or distortion.
23. After windows have been set in opening and properly built in, the joint between the window frame and masonry shall be carefully pointed up by the mason contractor.

Glazing (To be done by glazing contractor.)

24. All standard windows shall be glazed on the INSIDE.
25. Glass shall be held in place by Truscon copper clad steel wire glazing clips, four per light.
26. Glass shall be bed and face puttied with metal window putty.

Screens

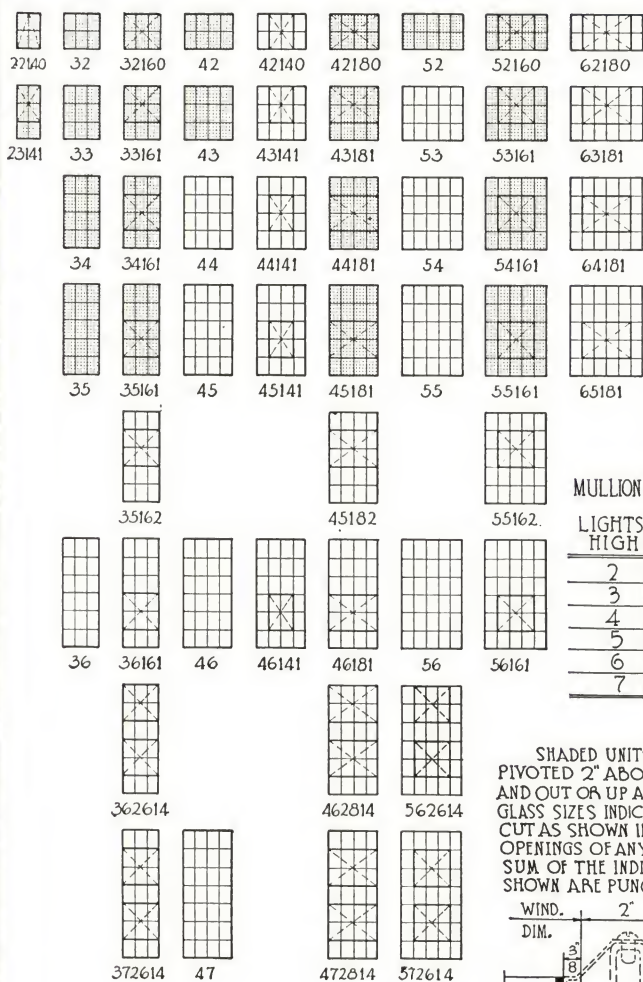
27. Standardized metal screens are available for Truscon Pivoted Steel Windows. However, for economy, when screens are required, we recommend commercial projected ventilators opening inwardly. See Truscon Commercial Projected Window catalog.

Underwriters' Label

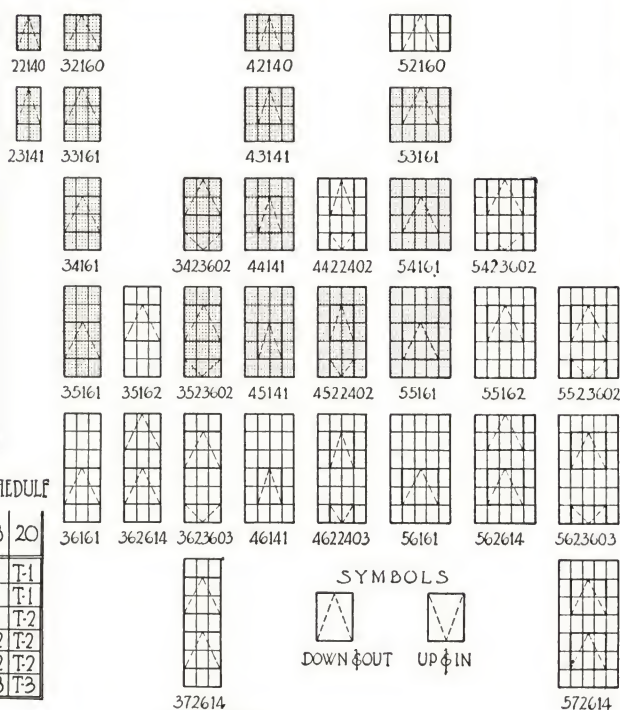
(National Board of Fire Underwriters.)

28. Underwriter's label of approval may be specified for sizes not exceeding 7 ft. 0 in. in width by 12 ft. 0 in. in height. One or more vertical mullions may be used. Special horizontal mullions may be used, provided opening width is not greater than 14 ft. 0 in. Windows must be inside angle glazed. Individual glass lights shall not exceed 350 sq. in. exposed area, 54 in. in height or 48 in. in width.

PIVOTED TYPE
12"×18" AND 14"×20" GLASS SIZE



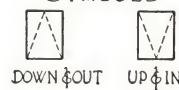
PROJECTED TYPE
12"x18" AND 14"x20" GLASS SIZE.



MULLION SCHEDULE

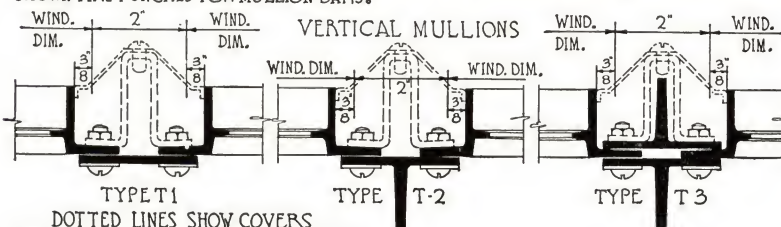
LIGHTS HIGH	18	20
2	T-1	T-1
3	T-1	T-1
4	T-1	T-2
5	T-2	T-2
6	T-2	T-2
7	T-3	T-3

SYMBOLS



• NOTES •

SHADED UNITS ARE WAREHOUSE STOCK TYPES. PIVOTED VENTS ARE HORIZONTALLY PIVOTED 2" ABOVE CENTER. ~ PROJECTED VENTS MAY BE SPECIFIED TO PROJECT DOWN AND OUT OR UP AND IN. VENTS OF WINDOWS CARRIED IN STOCK PROJECT ONLY AS SHOWN. GLASS SIZES INDICATED ARE FOR FIXED LIGHTS ONLY. GLASS LIGHTS IN VENTILATORS MUST BE CUT AS SHOWN IN GLASS SIZE DIAGRAMS BELOW. WINDOWS MAY BE COMBINED TO FILL OPENINGS OF ANY WIDTH BY MEANS OF MULLIONS, THE WIDTH OF THE OPENING BEING THE SUM OF THE INDIVIDUAL SASH DIMENSIONS PLUS 2" FOR EACH MULLION ADDED. ALL TYPES SHOWN ARE PUNCHED FOR MULLION BARS.



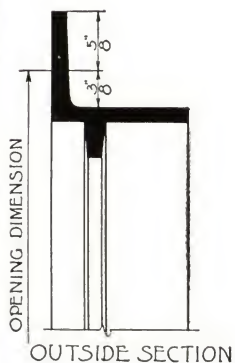
DOTTED LINES SHOW COVERS

OPENING DIMENSIONS

LIGHTS WIDE	GLASS WIDTH		LIGHTS HIGH	GLASS HEIGHT	
	12"	14"		18"	20"
2	2'-1 $\frac{5}{8}$ "	2'-5 $\frac{5}{8}$ "	2	3'-1 $\frac{5}{8}$ "	3'-5 $\frac{5}{8}$ "
3	3'-2"	3'-8"	3	4'-8"	5'-2"
4	4'-2 $\frac{3}{8}$ "	4'-10 $\frac{3}{8}$ "	4	6'-2 $\frac{3}{8}$ "	6'-10 $\frac{3}{8}$ "
5	5'-2 $\frac{3}{4}$ "	6'-0 $\frac{3}{4}$ "	5	7'-8 $\frac{1}{4}$ "	8'-6 $\frac{1}{4}$ "
6	6'-3 $\frac{1}{8}$ "	7'-3 $\frac{1}{8}$ "	6	9'-3 $\frac{1}{8}$ "	10'-3 $\frac{1}{8}$ "
			7	10'-9 $\frac{1}{2}$ "	11'-11 $\frac{1}{2}$ "

Figure 1 shows a 5x5 grid of fractions. The grid is divided into two main sections. The left section contains fractions with denominators 18, 16, 17, and 18. The right section contains fractions with denominators 20, 19, 20, 19, and 20. Arrows indicate the sequence of operations between adjacent cells.

$\frac{12}{18}$	$\frac{12}{18}$	$\frac{12}{18}$	$\frac{12}{18}$	$\frac{12}{18}$	$\frac{14}{20}$	$\frac{14}{20}$	$\frac{14}{20}$	$\frac{14}{20}$	$\frac{14}{20}$
$\frac{12}{18}$	$\frac{11}{17}$	$\frac{12}{17}$	$\frac{11}{17}$	$\frac{12}{18}$	$\frac{14}{20}$	$\frac{13}{19}$	$\frac{14}{19}$	$\frac{13}{19}$	$\frac{14}{20}$
$\frac{12}{18}$	$\frac{11}{17}$	$\frac{12}{17}$	$\frac{11}{17}$	$\frac{12}{18}$	$\frac{14}{20}$	$\frac{13}{19}$	$\frac{14}{19}$	$\frac{13}{19}$	$\frac{14}{20}$
$\frac{12}{18}$	$\frac{12}{18}$	$\frac{12}{18}$	$\frac{12}{18}$	$\frac{12}{18}$	$\frac{14}{20}$	$\frac{14}{20}$	$\frac{14}{20}$	$\frac{14}{20}$	$\frac{14}{20}$
$\frac{12}{18}$	$\frac{11}{16}$	$\frac{12}{16}$	$\frac{11}{16}$	$\frac{12}{18}$	$\frac{14}{20}$	$\frac{13}{18}$	$\frac{14}{18}$	$\frac{13}{18}$	$\frac{14}{20}$



$\frac{11}{17}$	$\frac{12}{17}$	$\frac{12}{17}$	$\frac{11}{17}$
$\frac{11}{17}$	$\frac{12}{17}$	$\frac{12}{17}$	$\frac{11}{17}$
$\frac{12}{18}$	$\frac{12}{18}$	$\frac{12}{18}$	$\frac{12}{18}$

$\frac{13}{19}$	$\frac{14}{19}$	$\frac{14}{19}$	$\frac{13}{19}$
$\frac{13}{19}$	$\frac{14}{19}$	$\frac{14}{19}$	$\frac{13}{19}$
$\frac{14}{20}$	$\frac{14}{20}$	$\frac{14}{20}$	$\frac{14}{20}$

GLASS SIZES FOR STANDARD PIVOTED WINDOWS

GLASS SIZES FOR STANDARD COMMERCIAL PROJECTED WINDOWS

TRUSCON
STEEL COMPANY
Youngstown, Ohio

TYPES AND SIZES PIVOTED AND COMMERCIAL PROJECTED STEEL WINDOWS

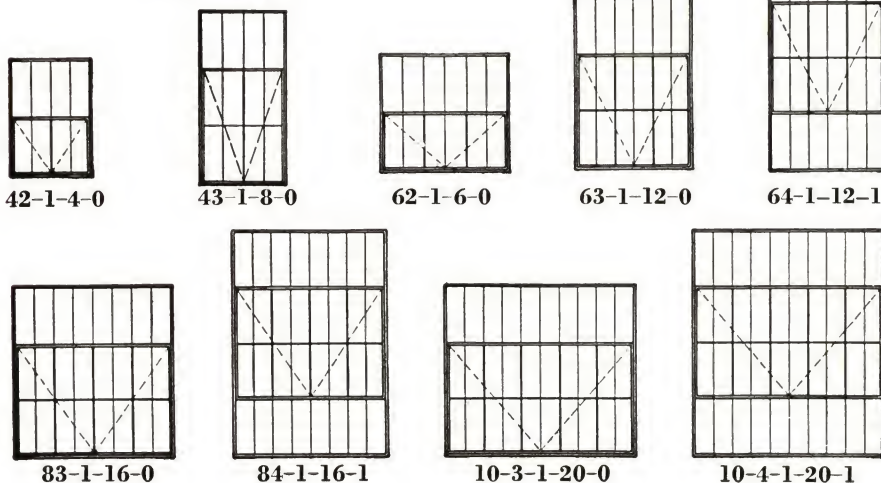
PLATE No.
A-1-B
OCTOBER, 1937

SECURITY STEEL WINDOWS



TRUSCON Security Windows are used in store buildings, warehouses and other buildings where adequate ventilation and at the same time protection from prowlers is required. The Truscon Security Window is a ventilated window and guard combined in one complete unit. The ventilator is bottom hinged and is equipped with friction side arms to hold the ventilator in any open position up to a maximum opening of 30° to 35°.

The nominal glass size of the main frame lights is only 6 in. x 18 in. which prevents entrance even if the glass is removed. The ventilator lights are 12 in. x 18 in. In glazing, glass is placed in the ventilator lights and the fixed lights above and below the ventilators but glass is not installed in the guard portion, which then forms a grille over the ventilator opening. Windows are prepared for INSIDE putty glazing. Nine sizes of Security Windows are carried in stock. Mullions for joining two or more Security Windows side by side in one opening are also carried in stock.



SCREENS

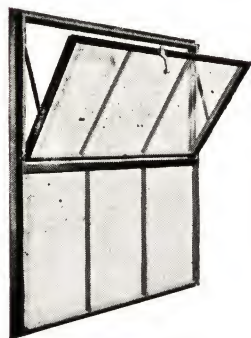
Screens, when required, shall be attached to the outside of the main frame opposite ventilator opening.

Screens have rewireable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Frames shall be given two coats of baked enamel before shipment.

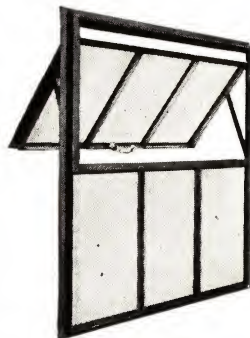
SIZES

Type	Width ft.—in.	Height ft.—in.
42-1-4-0	2-1 $\frac{5}{8}$	3-1 $\frac{5}{8}$
43-1-8-0	2-1 $\frac{5}{8}$	4-8
62-1-6-0	3-2	3-1 $\frac{5}{8}$
63-1-12-0	3-2	4-8
64-1-12-1	3-2	6-2 $\frac{3}{4}$
83-1-16-0	4-2 $\frac{3}{4}$	4-8
84-1-16-1	4-2 $\frac{3}{4}$	6-2 $\frac{3}{4}$
10-3-1-20-0	5-2 $\frac{3}{4}$	4-8
10-4-1-20-1	5-2 $\frac{3}{4}$	6-2 $\frac{3}{4}$

UTILITY STEEL WINDOWS PROJECTED TYPE



Projects In



Projects Out

TRUSCON Utility Steel Windows are ideal for use in buildings, such as garages, stores, shops, basements, area-ways, etc. The ventilator is a balanced projecting type which in opening swings outwardly, leaving the interior entirely unobstructed, or with ventilator projecting inwardly when it is desired to have no part of the window extending beyond the outside face of the building and for economical screening.

Utility Steel Windows are furnished with ventilator projecting out or projecting in and in only one size—3 ft. 4 in. wide by 3 ft. 7 $\frac{7}{8}$ in. high. Glass size in fixed portion of sash is 13 by 20 in. in the two outside lights, and 12 by 20 in. in center fixed light. The glass size of lights in the ventilator is 12 by 20 in.

SCREENS

For Utility Windows with inward projecting ventilators, a fixed screen attached to the outside is the more practical. The ventilator can be opened or closed without opening or disturbing the screen. Screens are easily removed or installed from the inside. When conditions do not permit the use of inward projecting ventilators, top hinged screens are used. This screen must be opened before operating the ventilator. Screens shall have rewireable electro-galvanized steel frames and solid bronze 16 mesh (.0113 in. diameter) screen cloth. Screen frames have baked enamel finish.

STEEL BASEMENT WINDOWS

TRUSCON Steel Basement Windows are manufactured of heavy hot-rolled sections; cannot warp, swell nor stick; always operate easily under all conditions. The continuous double overlapping weathering around Truscon Windows is an exclusive feature that makes them weather-proof.

Basement Windows are made either with the hinge at the top or at the bottom, both types having the same sizes and both opening in. The bottom-hinged window has an arm to limit the opening. Furnished complete with hardware.

Steel frame screens with 16 mesh bronze cloth and clips, are available if required.

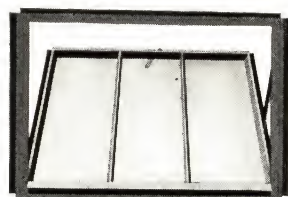
FIVE STANDARD SIZES

Glass Size, in.	No. of Lights Wide	Window Opening, ft.—in.
*10 x 12	2	1-11 $\frac{1}{4}$ x 1-3
10 x 12	3	2-9 $\frac{1}{2}$ x 1-3
10 x 20	3	2-9 $\frac{1}{2}$ x 1-11
14 x 20	2	2-7 $\frac{1}{4}$ x 1-11
12 x 18	3	3-3 $\frac{1}{2}$ x 1-9

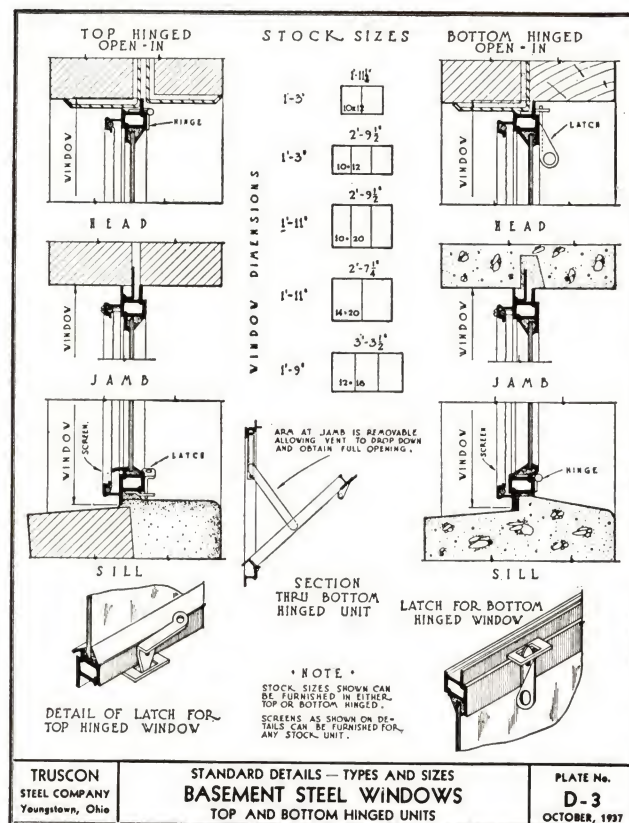
*Furnished in top hinged only.



Top Hinged



Bottom Hinged



LINTELS FORMED STEEL



Formed Lintel

THE continuous horizontal ribs and the turned edges of Truscon formed lintels provide much greater strength than plain formed angles of the same size. The horizontal ribs and turned edges provide a more proper bed for the brick and mortar. The 3 $\frac{1}{2}$ -in. horizontal leg does not extend beyond the face of the brick. All lintels receive a shop coat of paint before shipment. Lintels are stocked in all Truscon warehouses for immediate delivery. Truscon formed Steel Lintels can be used for any opening up to 6 ft. 3 in. not having concentrated loads occurring directly above the lintel. They are stocked in eleven sizes, as follows:

3 $\frac{1}{2}$ in. x 3 $\frac{1}{2}$ in. x 11 gauge—2 ft., 2 ft. 6 in., 3 ft., 3 ft. 6 in., 4 ft. and 4 ft. 6 in. lengths.

4 $\frac{1}{2}$ in. x 3 $\frac{1}{2}$ in. x 9 gauge—5 ft., 5 ft. 6 in., 6 ft., 6 ft. 6 in., and 7 ft. lengths.

HOT ROLLED

TRUSCON Hot Rolled Lintels are made from new stock; no reclaimed material is used. These lintels are carried in stock, cut to standard lengths. 3 $\frac{1}{2}$ in. x 3 $\frac{1}{2}$ in. x $\frac{1}{4}$ in. Angle; 11 sizes, 2 ft. 0 in. to 7 ft. 0 in. (multiples of 6 in.); 4 in x 3 $\frac{1}{2}$ in. x $\frac{1}{8}$ in. Angle; 8 sizes, 5 ft. 6 in. to 9 ft. 0 in. (multiples of 6 in.).



Hot Rolled Lintel

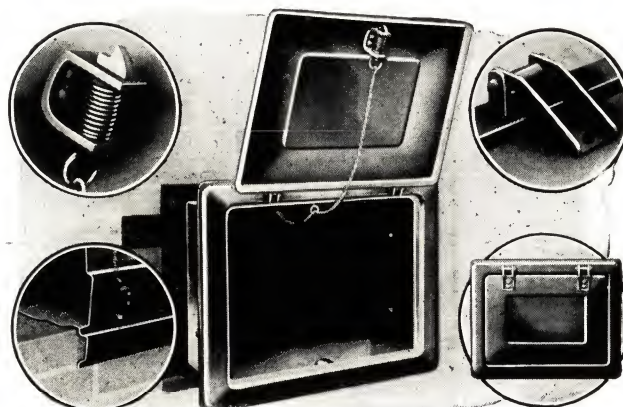
COAL CHUTES PRESSED STEEL

TRUSCON Coal Chute is break-proof, weather-tight, thief-proof and simple. No castings are used... the door and frame being made entirely of heavy, rust-resisting copper-bearing pressed steel.

The neat, trim appearance adds considerably to the attractiveness of the exterior of the house, and the sturdy door which closes into a deep recess in the frame excludes drafts.

The Truscon Coal Chute is complete with positive spring latch, slotted hinges which hold the door open when desired, and formed lugs which act as anchors for cementing in masonry openings. Every detail has been developed to afford the maximum utility in keeping with the proper architectural style.

Two standard sizes—Frame 27 x 21 $\frac{1}{4}$ in. Door opening, 22 $\frac{1}{2}$ x 16 $\frac{3}{4}$ in. Depths, 8 or 12 in.

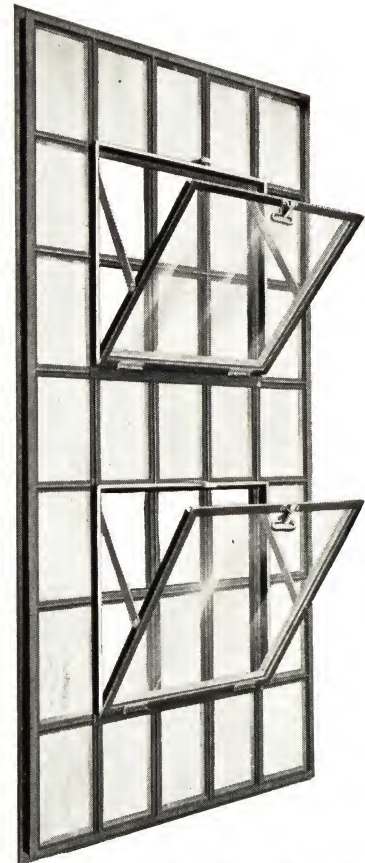


DETENTION WINDOWS

MODERN penology definitely recognizes that light and ventilation are among the most certain incentives to the good behavior and health of the inmates. In selecting windows for detention institutions such as prisons, reformatories and psychopathic hospitals, the designs require a variety of types to conform to the different conditions found within an institution.

Security is the first consideration, but it is obvious that what might be adequate security for one class of inmates is totally inadequate for a more desperate class. It is with the object of providing maximum efficiencies consistent with the degree of detention-security desired that the various types of Truscon Detention Windows were developed.

Included in the full line of Truscon Detention Windows are types which will meet all requirements for such institutions. Each type offers particular advantages—in some cases, maximum security; in others maximum lighting and ventilation. The individual needs will, in each case, govern the selection. Only a few of the many types of these detention windows can be portrayed on these pages. Information on other types may be secured upon request.



Truscon Lock Bar Detention Window

LOCK BAR WINDOW

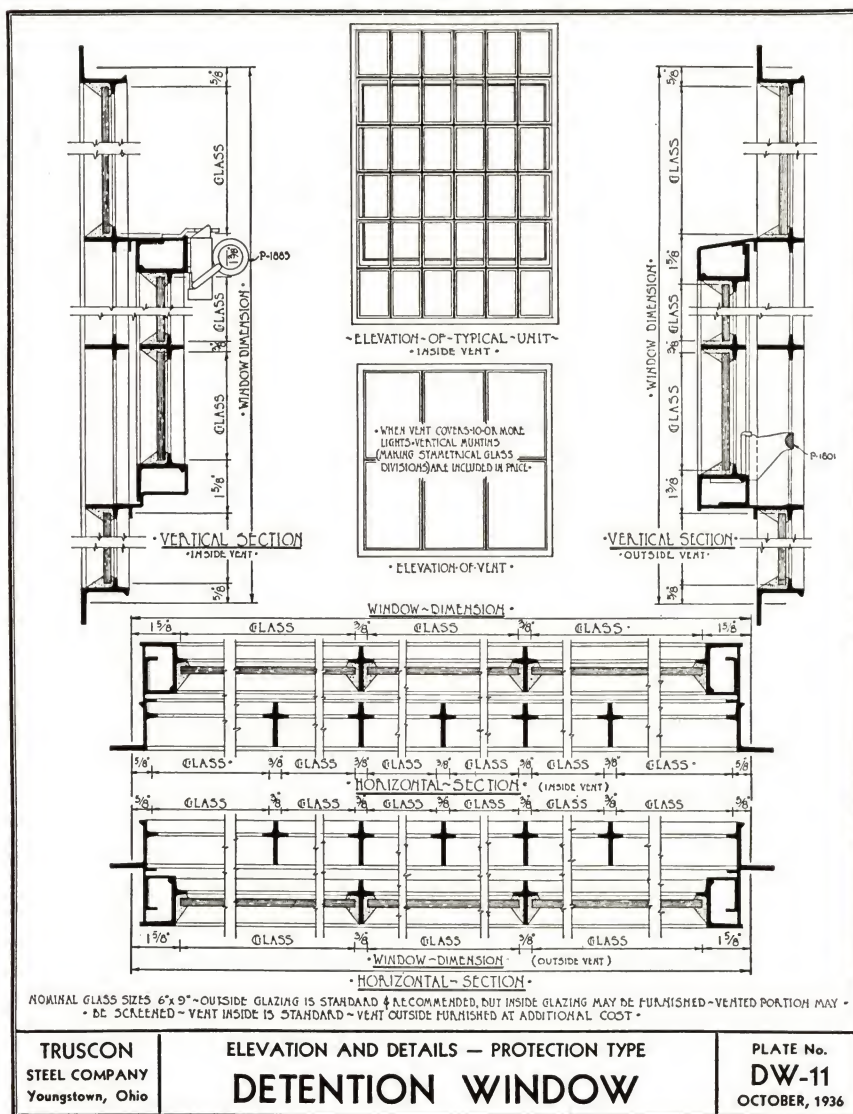
This window can be furnished with sections of various weights, depth and thickness. All windows, however, incorporate the maximum in detention and ventilating features.

DOUBLE HUNG WINDOW

This type of detention window is the Truscon solid steel, plate type, galvanized and weather-stripped, double-hung window. A steel bar grille is welded securely to the exterior frame providing a positive barrier when window is open. Where desired, these windows can be equipped with a combination fly screen and protective wire guard to be installed on the inside.

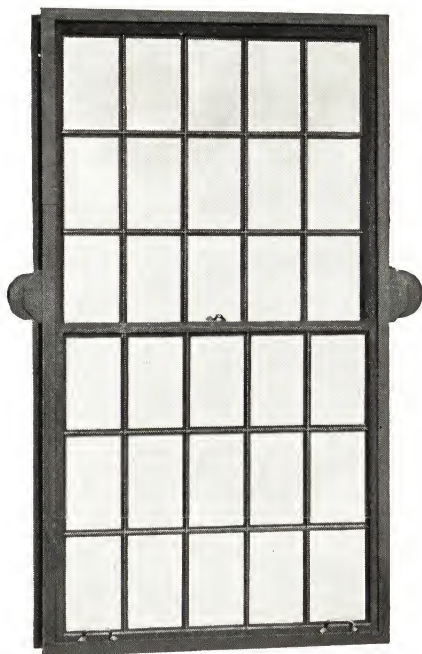
OTHER DETENTION WINDOWS

Donovan Windows and Casement Windows can be designed to incorporate detention features and still retain the salient features peculiar to their design.

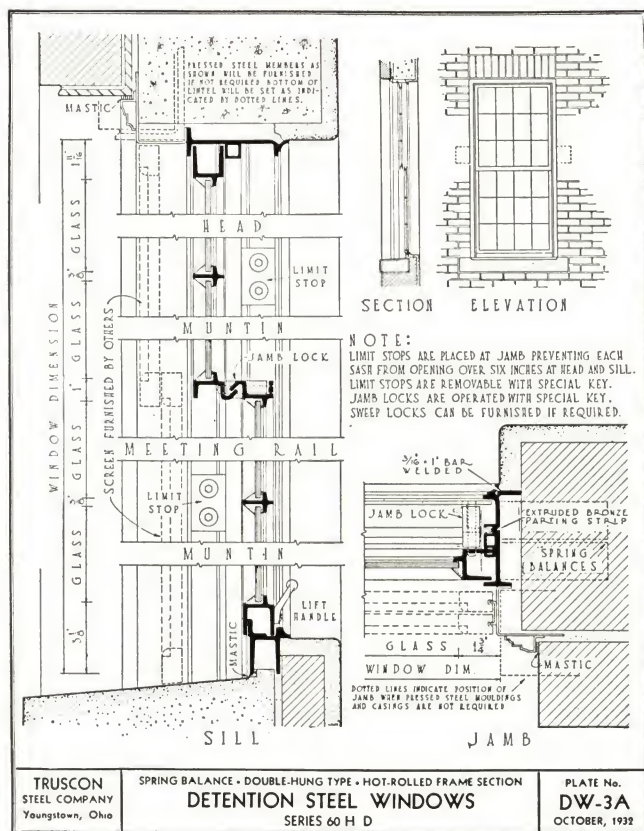


DETENTION WINDOWS (Continued)

WHERE the exterior and interior simplicity of ordinary institutional construction is the desirable feature the Spring Balanced Detention Window fulfills those requirements admirably. In this type of window ventilation may be obtained at top and bottom.



Truscon Spring Balanced Detention Window
Series 60HD



SPECIFICATIONS Series 60HD

1 General—All windows so indicated on the plans and elevations and called for in these specifications shall be Heavy Detention Spring Balance Double-Hung windows as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—Frames and Sash: Shall be constructed of hot-rolled new billet steel; sub-frames, if required, shall be of 14-gauge material; exterior moulding, if required, of 18-gauge.

3 Construction—(a) *Frame Members*—Head and jamb members shall be of a special rolled section, depth of section to be not less than $4\frac{1}{2}$ in., including cove moulding, which is an integral part of the frame section. Intersection of sections to be welded and ground smooth where necessary. When required, an exterior sub-frame and moulding may be applied to frame section. (See detail.)

(b) *Sash*—Shall be constructed of channel sections not less than $1\frac{7}{16}$ in. deep, the corners to be welded.

(c) *Muntins*—Where required, shall be hot-rolled sections. At intersections, there shall be a mechanical joint rigidly interlocking the muntins flush with each other. Joints of muntins and frames, stiles and rails shall be tenoned, mortised and air-hammer riveted.

4 Weathering—A specially designed combination weathering and parting strip of extruded bronze shall be provided at the jambs. (See detail.) There shall be a weathering block provided at the meeting rail.

5 Hardware—(a) All units shall be equipped with one pair of malleable lift handles and sweep lock at meeting rail. Special jamb detention locking device, key operated, can be furnished in place of sweep lock at option of customer.

(b) Each sash shall be suspended on two enclosed spring balances as furnished by TRUSCON STEEL COMPANY. Spring balances shall be enclosed in a metal housing and securely attached to frame. Metal tapes shall be properly attached to sash and shall hang vertically and run freely at all times.

(c) Limit stops shall be provided to prevent upper or lower sash from opening more than 6 in. and shall be removable only by a special key. Upon removal, top or bottom sash can slide full height of opening.

6 Anchors—Units shall be equipped with strap anchors at jamb for attaching to building construction.

7 Painting—(a) All windows shall be given one coat of protective paint, before shipment.

(b) Windows shall be BONDERIZED before painting. (Optional at slight extra cost.)

Note: Screen guides can be furnished and applied to exterior sub-frame of Series 60HD windows to permit application of vertical sliding screen. (See detail.)

CONTINUOUS WINDOWS

IDEALLY suited for use in industrial plants where the nature of the work requires frequent and rapid ventilation of the building. They are also most practical for any buildings having monitors or saw-tooth faces, or where banks of windows reach considerable heights, necessitating remote control for operation. Particularly valuable where large areas are enclosed which cannot be satisfactorily lighted through the side walls.

The scientific application of Continuous Windows to a building insures maximum daylight and gives absolute control of temperature and ventilation, resulting in a marked effect on increased efficiency and reduction of production costs. The quick opening and closing of glass areas by mechanical operation is invaluable to clear out gases, smoke and excessive heat and to protect against sudden change in weather.

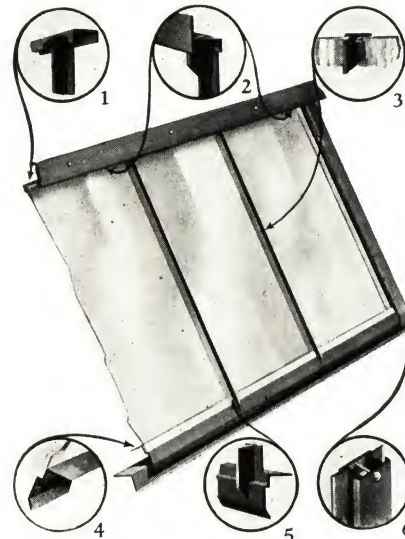
PRESSED STEEL FRAMES

Particularly well adapted for use in modern structures, especially powerhouses, where the effect of massive strength must be accurately met. Made of heavy gauge steel, absolutely uniform and economical. Details furnished on request.

1 Welded Mortise and Tenon Joint—Prevents twisting.

2 Hinge Member—With hot rolled top rail channel provides continuous bearing and weathering without use of flashing.

3 Glazing Clips—Of heavy brass on vertical muntin bars.



4 Bottom Rail—

Hot rolled bottom rail wide flange adds lateral stiffness to window. For the attachment of mechanical operator.

5 Welded Mortise and Tenon Joint—

6 Vertical Mullion—

Provides for expansion.

MECHANICAL OPERATORS

TRUSCON is confident that its many years' experience in solving the problems of daylighting and ventilation through the medium of a complete line of steel windows has placed it in an enviable position to design and manufacture efficient and dependable mechanical window operators.

Operators for opening and closing Continuous, Pivoted and Projected types of windows are available in either hand or motor

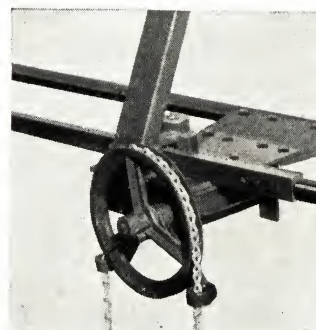
operated units. They are made in various designs and capacities to meet the requirements of any job. On this and the following page are illustrated a few representative types of operators designed and manufactured by TRUSCON STEEL COMPANY.

We offer the services of our Engineering Department to assist you in working out problems of operator design or installation. Truscon maintains offices in all key cities for your convenience.

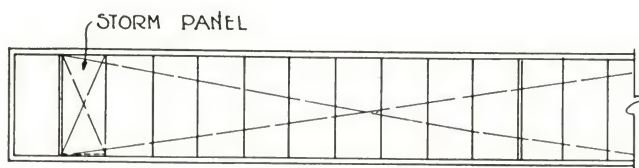
CONTINUOUS WINDOW OPERATOR TENSION TOGGLE TYPE

THE operator illustrated below is of the Tension Toggle Type and is used to operate long runs of Continuous windows. For short runs, Rack and Pinion type may be used due to lighter loads.

Tension Toggle Arms as illustrated below are made in four sizes to suit the different standard heights of continuous windows.

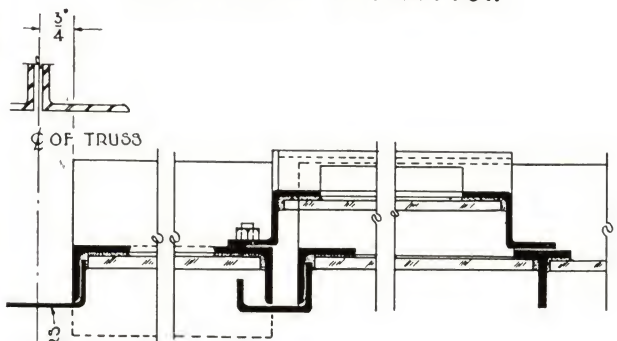


At the left is illustrated P-750 Hand Chain Operated Power for tension toggle operation of medium length runs. This power can be motorized conveniently when electrical control is desired. For longer runs, CP-69 Light Duplex Power, or CP-83 Heavy Duplex Power is recommended. Powers CP-69 and CP-83 must be motorized.

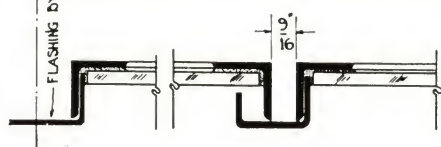


OUTSIDE ELEVATION

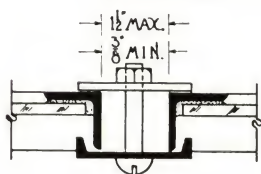
HEIGHT OF OPENINGS	HEIGHT OF SASH	GLASS SIZES		
		STANDARD PANELS	END PANELS	STORM PANELS
2'-10 1/2"	3'-0"	23 3/8" x 32 3/4"	22 3/8" x 32 3/4"	23 3/8" x 32 3/4"
3'-10 1/2"	4'-0"	23 3/8" x 44 3/4"	22 3/8" x 44 3/4"	23 3/8" x 44 3/4"
4'-10 1/2"	5'-0"	23 3/8" x 56 3/4"	22 3/8" x 56 3/4"	23 3/8" x 56 3/4"
5'-10 1/2"	6'-0"	23 3/8" x 68 3/4"	22 3/8" x 68 3/4"	23 3/8" x 68 3/4"



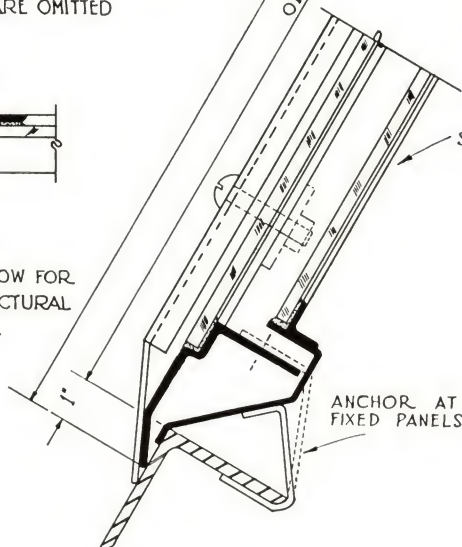
TYPICAL END SECTION SHOWING END AND STORM PANEL



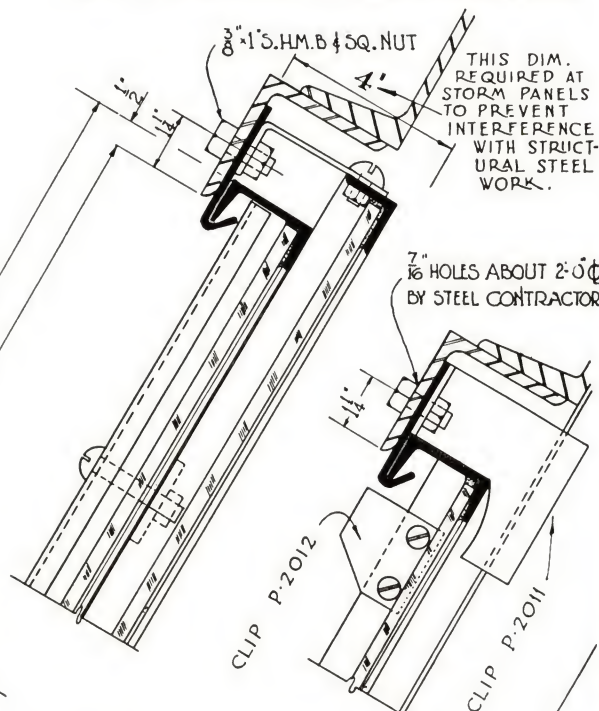
END CONDITION WHERE STORM PANELS ARE OMITTED



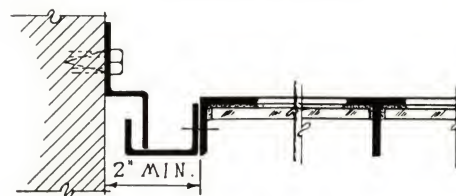
MULLION ADJUSTABLE TO ALLOW FOR VARIATION IN STRUCTURAL STEEL WORK



SECTION SHOWING SWING SASH AND STORM PANEL.
SASH CAN BE HUNG IN EITHER VERTICAL OR SLANTED POSITION.



DETAIL SHOWING SAFETY CLIPS AT THE HEAD



TYPICAL END SECTION SHOWING SWING SASH EXTENDING TO JAMB

-NOTES-

STANDARD UNITS OF TRUSCON CONTINUOUS SASH ARE DESIGNED FOR TRUSS SPACING OF 20'-0" ON CENTER. HOWEVER THEY MAY BE COMBINED TO FILL OPENINGS ANY WIDTH OR HEIGHT.

TRUSCON
STEEL COMPANY
Youngstown, Ohio

STANDARD DETAILS CONTINUOUS STEEL WINDOWS

PLATE No.
E-7
OCTOBER, 1937

WORM AND GEAR OPERATORS

Lever Arm

ILLUSTRATED below is lever arm operator, hand chain controlled, which operates a torsion shaft with lever arms to actuate one or more tiers of horizontal pivoted ventilators. Vertical shaft with mitre gear and hand wheel can be used instead of hand chain.

The worm and gear is fully enclosed and runs in oil tight housing.

Rack and Pinion

RACK and pinion operator is practically the same as worm and gear, except that rack and pinion arms are used instead of lever arms, and the torsion shaft makes one or more complete rotations. This type is generally used for operating projected and top pivoted ventilators but may be used when it is desired to operate long lines of horizontal pivoted ventilators.

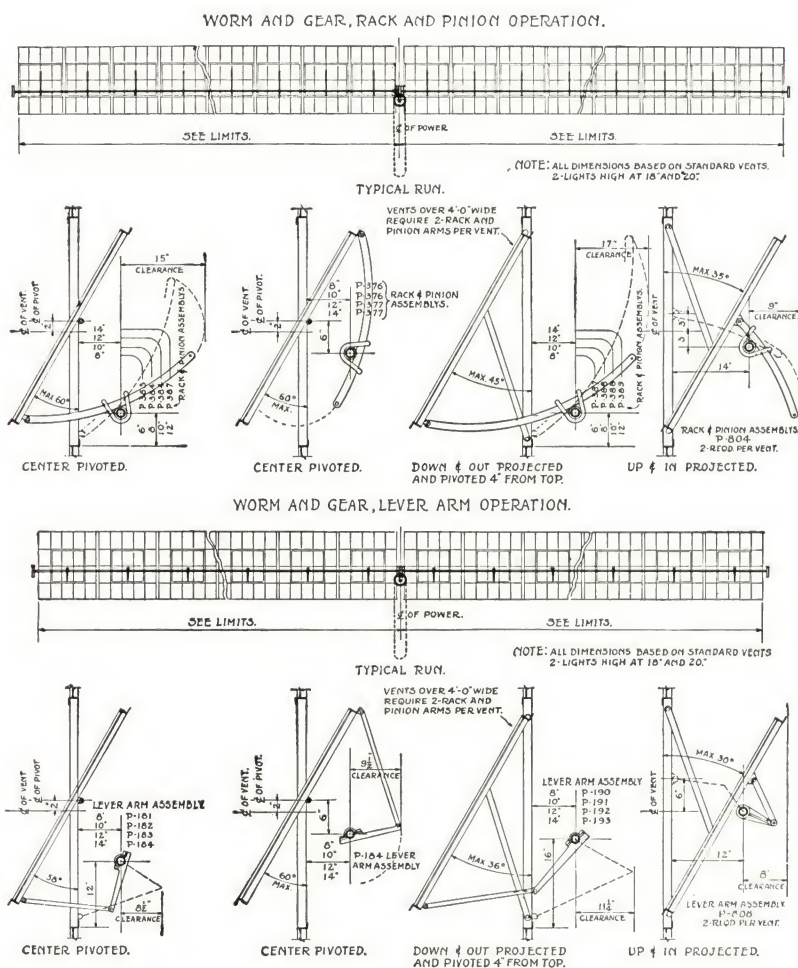
In addition to hand chain or vertical shaft with mitre gear and hand wheel control, rack and pinion operators can be electrically controlled.



Typical Illustration of Lever Arm Operation of Horizontally Pivoted Windows



Typical Illustration of Rack and Pinion Operation of Horizontally Pivoted Windows



STEEL DOORS

WALLS may be built of steel, reinforced concrete or other masonry construction but unless the doors in them are of steel construction the advantages are largely lost. Of equal importance is the ability of steel doors to withstand constant hard usage, to be unaffected by weather conditions and to last indefinitely.

These important factors have all had primary consideration in the design and manufacture of Truscon Steel Doors. The satisfaction these doors are giving in innumerable industrial, commercial and other buildings is the best testimonial to their efficiency. Steel doors are fire-resisting, long-lived and do not warp, swell or rot. They protect the contents against theft, trespass and the elements.

The best commercial grades of steel go into doors made by Truscon. This steel is formed into rectangular tubes and structural hot rolled shapes, which after many years of application have been accepted by outstanding engineers as the most practical for use in steel door construction.

Truscon, with its many years' experience in the design and manufacture of Steel Doors of all types and sizes, is in excellent position to work with architects and engineers in selecting the proper type of steel door to fit in perfectly with the design and construction details of any building.

DOORS DESIGNED AND MANUFACTURED BY TRUSCON

INDUSTRIAL STEEL DOORS—SERIES 31

Carried for immediate delivery in Truscon warehouses throughout the United States. Recommended for use in basements, furnace and boiler rooms, fire exits, service entrances, utility spaces and pent houses of hotels, residences, apartments, schools, hospitals, office buildings, and for general use in grain elevators, ramp enclosures, oil pump houses, freight and power houses, filling stations, public and private garages and factories.

INDUSTRIAL STEEL DOORS—SERIES 100

Designed for factory, mill, commercial and warehouse buildings where requirements make necessary heavier construction.

ACCORDION DOORS—SERIES 500

An extremely fast-operating door, especially designed to meet such conditions as are presented by railroad shops, fire stations, round houses, public garages and any structure where unobstructed openings for entrances are desirable. Can be designed for motor operation.

VERTICAL LIFT DOORS—SERIES 600

Because of their simplicity of operation, are used in warehouses, freight houses, garages and factories. This type of door can be furnished in practically any size. An outstanding feature is the unobstructed opening when the door is fully opened.

VERTICAL LIFT-SWING AND TURN-OVER DOORS

Heavy, rugged doors, especially desirable for pier and warehouse work. They operate easily, swing overhead and require a minimum of head room when opened.

OVERDOORS—SERIES 204 AND 386

They offer many advantages. They are light, fast doors, spring counter-balanced, giving economy of space both inside and outside, protection from the weather, neat appearance and ease of operation. Especially recommended for use in garages, service stations and repair shops where a minimum of head room is available.

BIFOLD DOORS—SERIES 700

Require a minimum amount of head room and medium sizes are hand operated. They are used principally in freight houses, warehouses, shipping and loading platforms. They are mechanically correct and require less head room than many other types that fold above the opening.

CANOPY DOORS—SERIES 800

An all purpose door. It fits in anywhere, from the small individual garage to the largest openings in bus or truck terminals. It requires a minimum amount of head room.

AIRPLANE HANGAR DOORS

Fabricated in several types to meet the requirements of any type of hangar. They are:

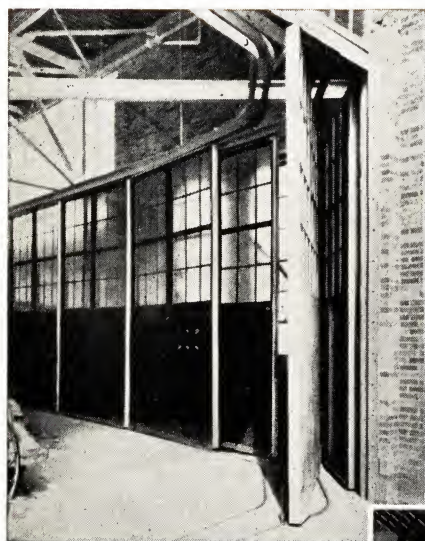
Straight Slide Type—The strongest, finest and most serviceable and economical door of this type on the market. There is no limit to either the height or width of opening that this type of door will meet.

Round the Corner Type—The door units operate on separate tracks which are curved at the ends of the openings and which parallel each other. When open, the doors lie against the inside wall of the hangar to allow maximum opening.

Morgan Type—Is the latest design of our electrically operated overhead hangar steel doors.

Telescopic Canopy Type—Is adaptable to buildings where it is desirable to keep the center of gravity of the door outside the front trusses and where a restricted canopy overhang is necessary.

Original Canopy Type—Full canopy type. No telescoping or folding features and is not counter-weighted. Each leaf is hinged at the top of the opening and swings upward, virtually increasing the area of the building by the full height of the door. Especially adapted for hangar buildings.



Airplane Hangar Doors
Round the Corner Type



Vertical Lift-Swing Doors



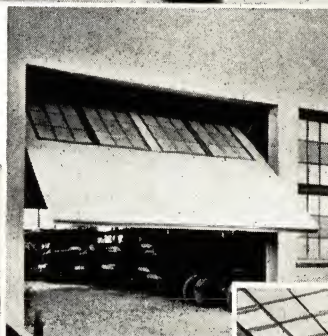
Accordion Doors



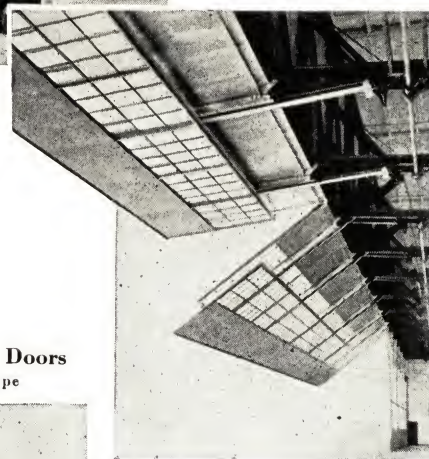
Overdoors
Operating Overhead



Canopy Doors



Airplane Hangar Doors
Straight Track Type



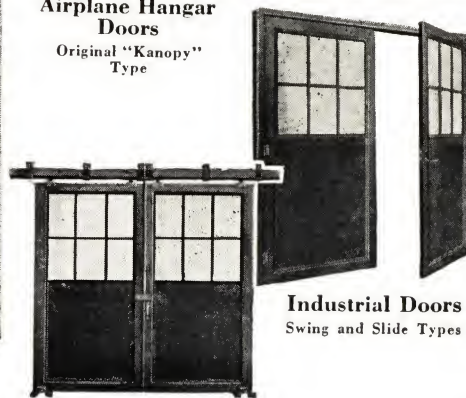
Telescopic Canopy Doors



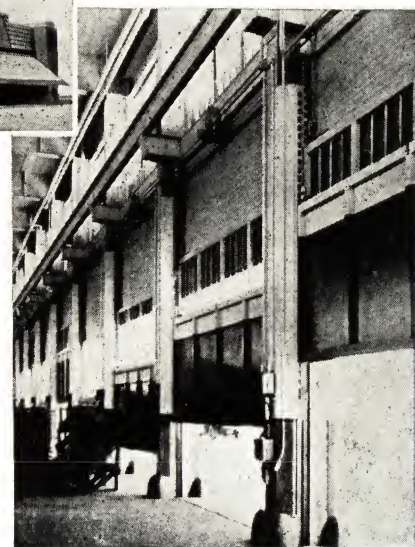
Bifold Doors



Airplane Hangar Doors
Original "Kanopy" Type



Industrial Doors
Swing and Slide Types



Vertical Lift Doors

INDUSTRIAL STEEL DOORS, SERIES 31

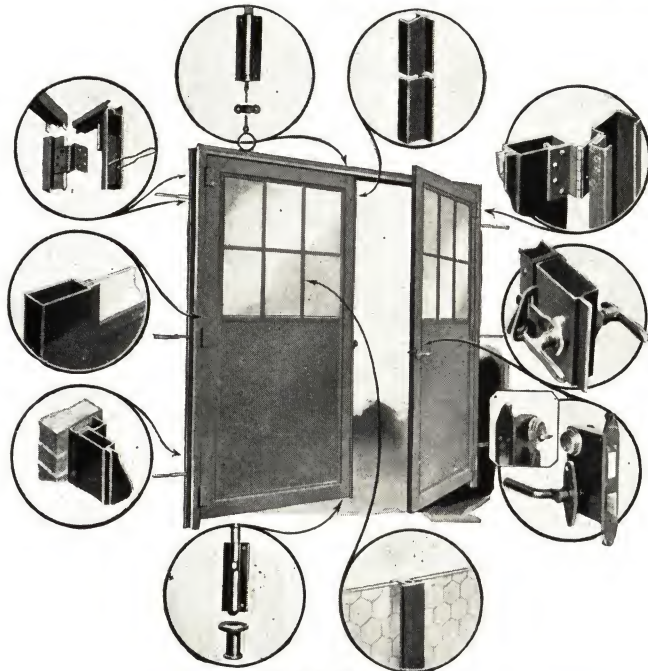
SWING AND SLIDE TYPES

ADAPTABLE for use in basements, rear entrances, boiler rooms, fire exits and similar places in residences, hotels, apartments, schools, churches, shops, warehouses, filling stations and stores. Swing Type Doors can be furnished with heavily reinforced pressed steel door frames, prepared for standard hardware.

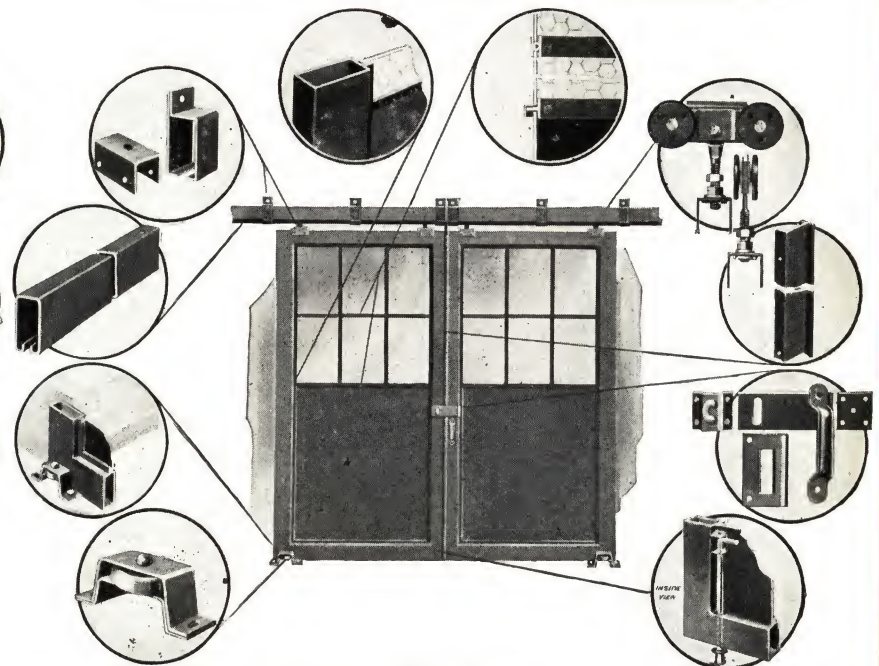


Lock Seam Tube

Stiles and rails are made of pressed steel tubing with lock seam. All corners are carefully fitted and welded solidly. The large size of the 14 gauge tube, 1 $\frac{3}{4}$ x5 in., provides an ideal condition for welding. Practically 14 in. of weld at corners.



Swing Type



Slide Type

SPECIFICATIONS

1 General—All doors so indicated on the plans and elevations and called for in these specifications shall be Industrial Steel Doors, Series 31, either swing or slide type, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—(a) The stiles, top rail and bottom rail of the Industrial Steel Door, Series 31, shall be constructed of 5x1 $\frac{3}{4}$ in. 14-gauge pressed steel tube.

(b) Sash panel shall be an integral part of the door leaf securely welded to the door rails.

(c) The steel panels shall be constructed from annealed and patent leveled sheets.

3 Construction—(a) The corners shall be of welded construction with all joints face welded and ground smooth.

(b) The upper portion of the door shall be fitted with a sash panel, all members of which shall be welded in place. The glass shall be held in place with putty and glazing angles.

Note: Upper portion of the door may be fitted with solid steel panel at no extra charge.

(c) The lower portion of the door shall be equipped with patent level steel panels electrically spot-welded to the stiles and rails and shall not be less than 18-gauge in thickness.

4 Hardware—(a) Each swinging leaf shall be equipped with three (3) heavy steel half surface template butt hinges.

(b) All swing doors shall be equipped with Truscon standard mortise cylinder lock with solid bronze face, or lever latch and padlock brackets (specify which). Cylinder lock to be equipped with spring bolt operated by lever handles and dead bolt operated by thumb turn from inside and by key from outside.

(c) Where swing doors are hung in pairs one leaf shall be equipped with foot bolt and spring top bolt.

(d) Sliding leaves shall be hung from four (4) wheel roller-bearing trolleys and shall be provided with guides, handles, stops and hasp and staples as shown on the drawings.

(e) With all double swing or double slide doors, an astragal shall be provided by door manufacturer.

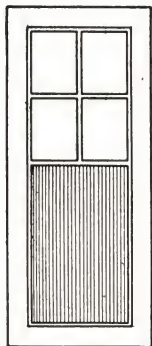
5 Pressed Steel Door Frame—(a) All Industrial Doors shall be provided with a pressed steel door frame made of 14-gauge steel. Unless otherwise specified, these frames shall be supplied by the door manufacturer.

(b) Frame shall be either fastened directly to the structural steel or shall have anchors built into the masonry. The frame, regardless of jamb anchorage, shall extend 3 in. below finished floor line.

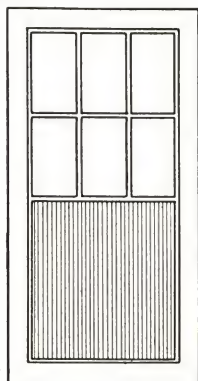
6 Painting—All doors and frames shall receive one coat of protective paint before shipment.

7 Erection—The erection of all doors shall be performed by the door manufacturer.

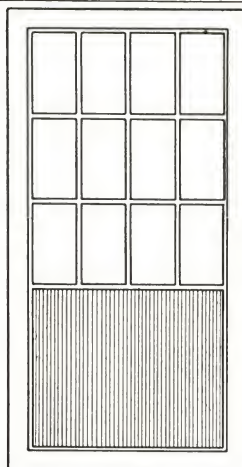
SINGLE DOORS SHOWN ARE
COMBINED TO MAKE DOUBLE
DOORS LISTED ON CHART BELOW



NO'S 26-70 & 30-70



NO'S 36-76 & 40-80

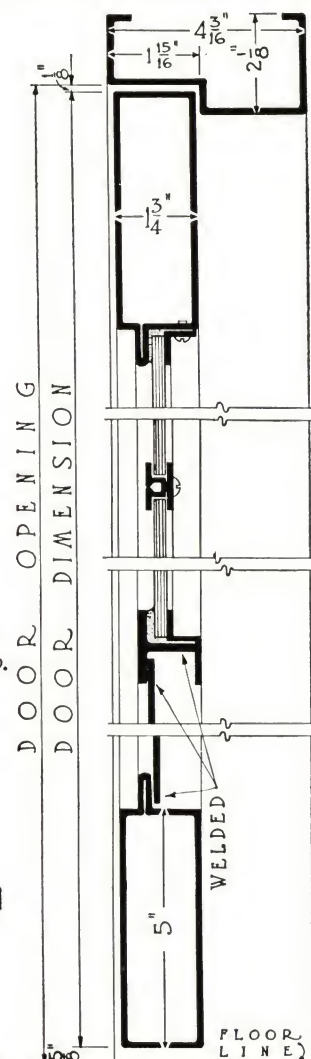


NO 50-100

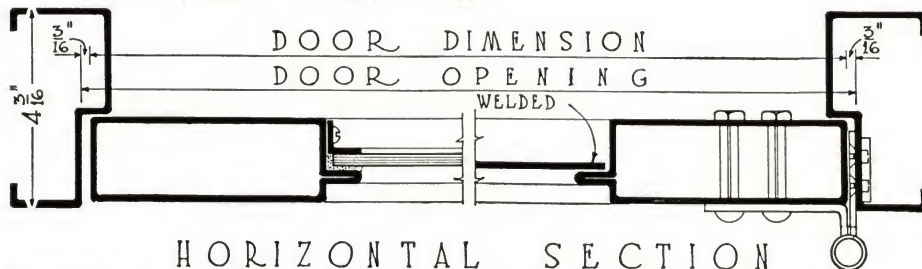
S T O C K			S I Z E S		
DOOR NO.	SIZE OF DOOR WIDTH HEIGHT	SIZE OF OPG. WIDTH HEIGHT	GLASS SIZE		
S I N G L E			S W I N G		
26-70	2'-5 5/8" 6'-11 1/4"	2'-6" 7'-0"	9 1/16" x 16"		
30-70	2'-11 5/8" 6'-11 1/4"	3'-0" 7'-0"	12 3/16" x 16"		
36-76	3'-5 5/8" 7'-5 1/4"	3'-6" 7'-6"	10 1/8" x 19"		
40-80	3'-11 5/8" 7'-11 1/4"	4'-0" 8'-0"	12 1/8" x 22"		
50-100	4'-11 5/8" 9'-11 1/4"	5'-0" 10'-0"	12" x 22 1/2"		
D O U B L E			S W I N G		
50-70	4'-11 5/8" 6'-11 1/4"	5'-0" 7'-0"	9 1/16" x 16"		
60-70	5'-11 5/8" 6'-11 1/4"	6'-0" 7'-0"	12 3/16" x 16"		
70-76	6'-11 5/8" 7'-5 1/4"	7'-0" 7'-6"	10 1/8" x 19"		
80-80	7'-11 5/8" 7'-11 1/4"	8'-0" 8'-0"	12 1/8" x 22"		
100-100	9'-11 5/8" 9'-11 1/4"	10'-0" 10'-0"	12" x 22 1/2"		

NOTES:

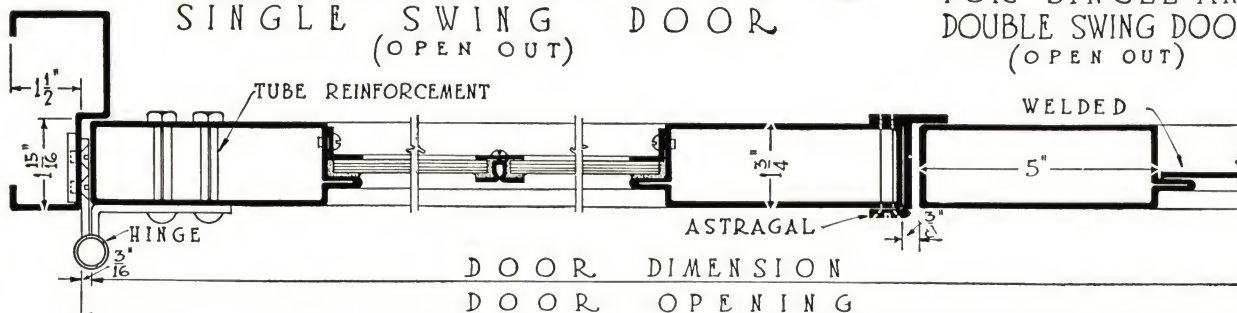
ALL DOORS ARE FURNISHED WITHOUT GLASS. GLAZING ANGLES HOWEVER ARE FURNISHED FOR ALL LIGHTS. DOORS MAY BE FURNISHED WITH SOLID STEEL PANELS IF DESIRED.



VERTICAL SECTION
FOR SINGLE AND
DOUBLE SWING DOORS
(OPEN OUT)



HORIZONTAL SECTION
SINGLE SWING DOOR
(OPEN OUT)



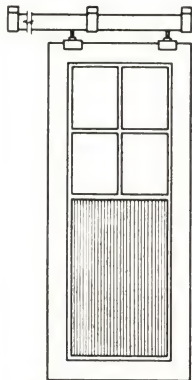
HORIZONTAL SECTION THRU DOUBLE SWING DOOR
(OPEN OUT)

TRUSCON
STEEL COMPANY
Youngstown, Ohio

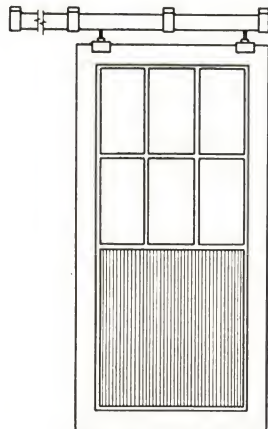
STANDARD DETAILS - SWING UNITS
INDUSTRIAL STEEL DOORS
SERIES 31

PLATE No.
J-1
OCTOBER, 1934

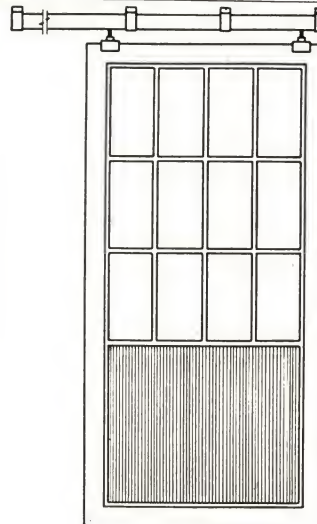
SINGLE DOORS SHOWN ARE
COMBINED TO MAKE DOUBLE
DOORS LISTED ON CHART BELOW



NO'S 26-70 & 30-70



NO'S 36-76 & 40-80

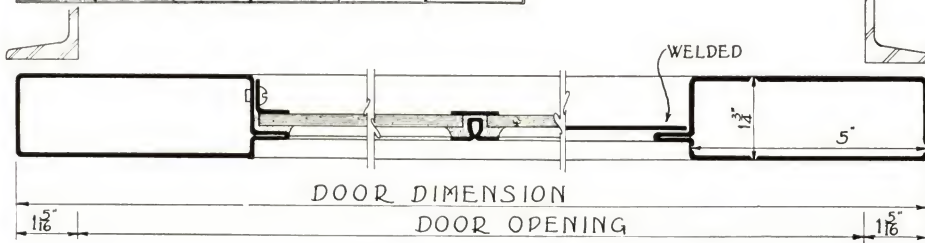


NO 50-100

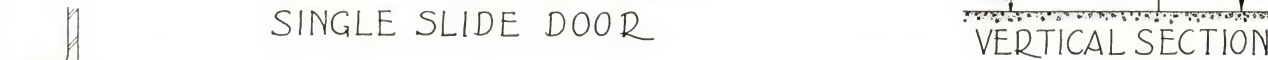
STOCK			SIZES		
DOOR NO.	SIZE OF DOOR		SIZE OF OPENING		GLASS
	WIDTH	HEIGHT	WIDTH	HEIGHT	SIZE
SINGLE			SLIDE		
26-70	2'-5 3/8"	6'-11 1/4"	2'-3"	6'-10 1/2"	9 1/8" x 16"
30-70	2'-11 3/8"	6'-11 1/4"	2'-9"	6'-10 1/2"	12 1/8" x 16"
36-76	3'-5 5/8"	7'-5 1/4"	3'-3"	7'-4 1/2"	10 1/8" x 19"
40-80	3'-11 3/8"	7'-11 1/4"	3'-9"	7'-10 1/2"	12 1/8" x 22"
50-100	4'-11 3/8"	9'-11 1/4"	4'-9"	9'-10 1/2"	12" x 22 1/2"
DOUBLE			SLIDE		
50-70	4'-11 3/8"	6'-11 1/4"	4'-9"	6'-10 1/2"	9 1/8" x 16"
60-70	5'-11 3/8"	6'-11 1/4"	5'-9"	6'-10 1/2"	12 1/8" x 16"
70-76	6'-11 3/8"	7'-5 1/4"	6'-9"	7'-4 1/2"	10 1/8" x 19"
80-80	7'-11 3/8"	7'-11 1/4"	7'-9"	7'-10 1/2"	12 1/8" x 22"
100-100	9'-11 3/8"	9'-11 1/4"	9'-9"	9'-10 1/2"	12" x 22 1/2"

NOTES:

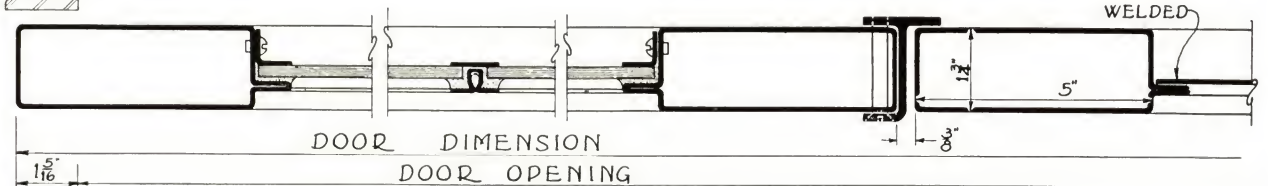
ALL DOORS ARE FURNISHED WITHOUT GLASS. GLAZING ANGLES AND STRIPS, HOWEVER, ARE FURNISHED FOR ALL LIGHTS. DOORS MAY BE FURNISHED WITH SOLID STEEL PANELS IF DESIRED.



HORIZONTAL SECTION
SINGLE SLIDE DOOR



VERTICAL SECTION



HORIZONTAL SECTION - DOUBLE SLIDE DOOR

TRUSCON
STEEL COMPANY
Youngstown, Ohio

STANDARD DETAILS - SLIDE UNITS
INDUSTRIAL STEEL DOORS
SERIES 31

PLATE No.
J-2
OCTOBER, 1934

INDUSTRIAL DOORS FOR LARGE OPENINGS

SERIES 100

Heavy Tubular Rail, Swing and Slide Types

INDUSTRIAL Doors for large openings meet every requirement of practical use and protection and are designed to fit the conditions of industry. They have been perfected through extensive use in industrial buildings of all kinds and are furnished in practically any size and arrangement.

These Doors are made of the best grade of commercial steel. Stiles and rails of tubular steel, mitred, internally reinforced and solidly welded at all corners, give maximum strength.

Primarily designed for large openings, but they are also economical in smaller openings where the doors are subjected to extremely hard and rough usage. Suggestions on types of Industrial Doors to meet special conditions will be furnished without obligation.

SPECIFICATIONS

1 General—All doors so indicated on the plans and elevations and called for in these specifications shall be Industrial Steel Doors, Series 100, either swing or slide type, as manufactured by TRUSCON STEEL COMPANY, Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—(a) The stiles, top rail, cross rails and bottom rail, shall be constructed of 13-gauge cold-rolled welded steel tubing, 4x2½ in.

(b) All Sash panels included in doors shall be constructed from hot-rolled new billet steel.

3 Construction—(a) The corners and intersections shall be welded and ground smooth. Welds must develop the full strength of the section. Corners shall be mitred.

(b) The upper portion of the door shall be fitted with a window built up of Truscon Standard members, welded in place and glazed with glass lights as shown on the drawings. The glass shall be held in place with putty and continuous steel glazing angles.

(c) The lower portion of the doors shall be fitted with not less than 13-gauge patent leveled steel panel welded in place.

4 Frames—Where shown on the drawings, steel channel frames for all door openings shall be furnished by this contractor.

5 Hardware—(a) Swinging doors shall be equipped with Truscon Standard heavy steel strap hinges. (Ball bearing butt hinges can be furnished if specified.)

(b) All swing doors shall be equipped with Truscon Standard mortise cylinder locks, or lever latch and padlock brackets (specify which) and heavy handles inside and out. (Cylinder lock not furnished on leaves larger in area than 60 sq. ft.)

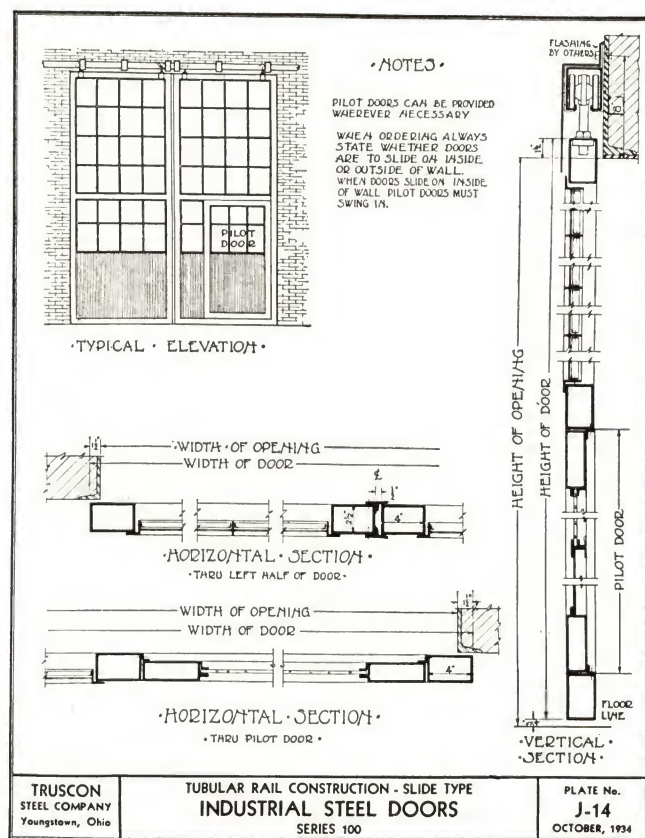
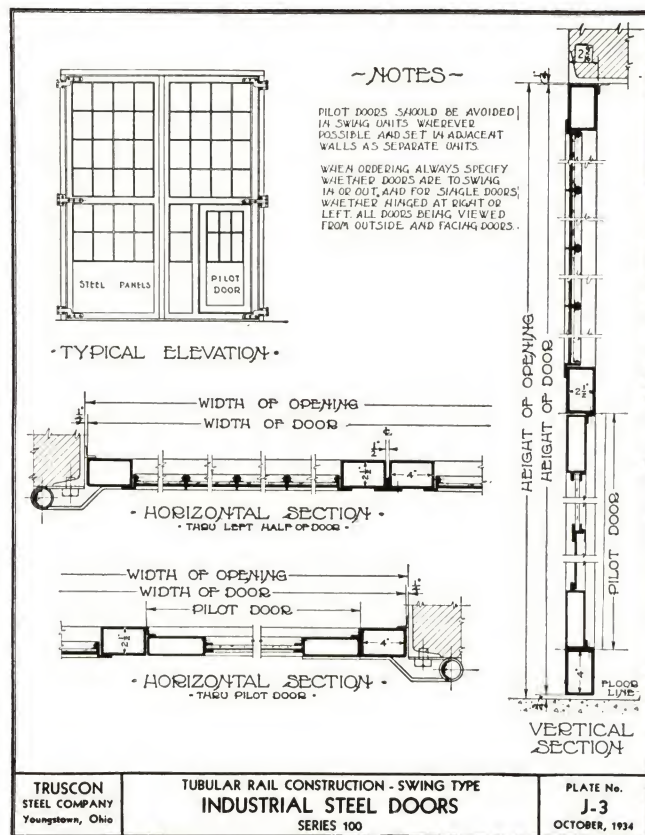
(c) Where swing doors are hung in pairs, one leaf shall be equipped with Truscon Standard cane bolt at bottom and spring bolt at top.

(d) Sliding doors shall be hung from Truscon Standard four-wheel trolleys and heavy channel track and shall be equipped with back stops, binders and complete hardware as shown on the drawings.

(e) An astragal shall be provided by door manufacturer with all double swing or double slide doors.

6 Painting—All doors and frames shall receive one coat of protective paint before shipment.

7 Erection—The erection of doors shall be performed by the door manufacturer.



OVERDOORS OPERATING OVERHEAD—SERIES 204 AND 386

THIS type of door offers many advantages; economy of space, protection from the weather, neat appearance, ease of operation and great practicability.

The spring balances used in Truscon Overdoors are considerably oversize, as are all the other operating parts. The doors are sure to provide a long time of satisfactory service. Overdoors

require no drilling, cutting or fitting—all operations, including a coat of paint, are completed in the shop, so that field assembly is reduced to a minimum. The sturdy steel sections are of the finest quality material and workmanship.

Ball-bearing rollers, positive weathering at jambs and high quality cylinder lock are provided on every door.

SPECIFICATIONS

SERIES 204, OVERDOORS FOR SMALL OPENINGS

1 General—All doors so indicated on the plans and elevations and called for in these specifications shall be Overdoors, Series 204, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—The stiles and rails of all leaves shall be constructed from hot-rolled new billet steel. The steel panels shall be constructed from cold-rolled sheets full pickled, reannealed and patent leveled and not less than 18 gauge thickness.

3 Construction—All joints shall be mortised and tenoned and air-hammer riveted. One leaf shall be open for glass to be held in place with continuous glazing angles. The balance of the leaves shall be fitted with steel panels held in place with continuous glazing angles and weatherproofed with mastic.

An astragal shall be spot-welded to the top member of each meeting rail to insure weathering between each leaf.

4 Hardware—Doors shall be complete with Truscon Standard Hardware for Spring Operation. Hard-



ware shall consist of all necessary rollers, track, weathering for jambs, lift handles and cylinder lock. A pull-down cord shall be provided.

5 Painting—All doors shall be given one coat of protective paint before shipment.

6 Erection—The erection of all doors shall be performed by the door manufacturer.

SERIES 386, OVERDOORS FOR LARGE OPENINGS

1 General—All doors so indicated on the plans and elevations and called for in these specifications shall be Overdoors, Series 386, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—The stiles and rails of all leaves shall be constructed from hot-rolled new billet steel. The steel panels shall be constructed from cold-rolled sheets full pickled, reannealed and patent leveled and not less than 18 gauge thickness.

3 Construction—(a) Outside frame members shall be made of special channel sections, with mitred corners welded and ground smooth. An astragal shall be spot welded to top member of each meeting rail to insure weathering between leaves.

(b) Glass panels shall be arranged for inside putty glazing with continuous glazing angles.

(c) Solid steel panels shall be held in place with continuous glazing angles and weatherproofed with mastic.

4 Hardware—All doors shall be counter-balanced



by a torsion spring placed above the lintel. In addition, a geared hand chain operator shall be provided on all doors. Locking shall be by means of a throw bolt placed on inside at one jamb.

5 Painting—All doors shall receive one coat of protective paint before shipment.

6 Erection—Erection of all doors shall be performed by the door manufacturer.

ACCORDION DOORS SERIES 500HT AND 500LT

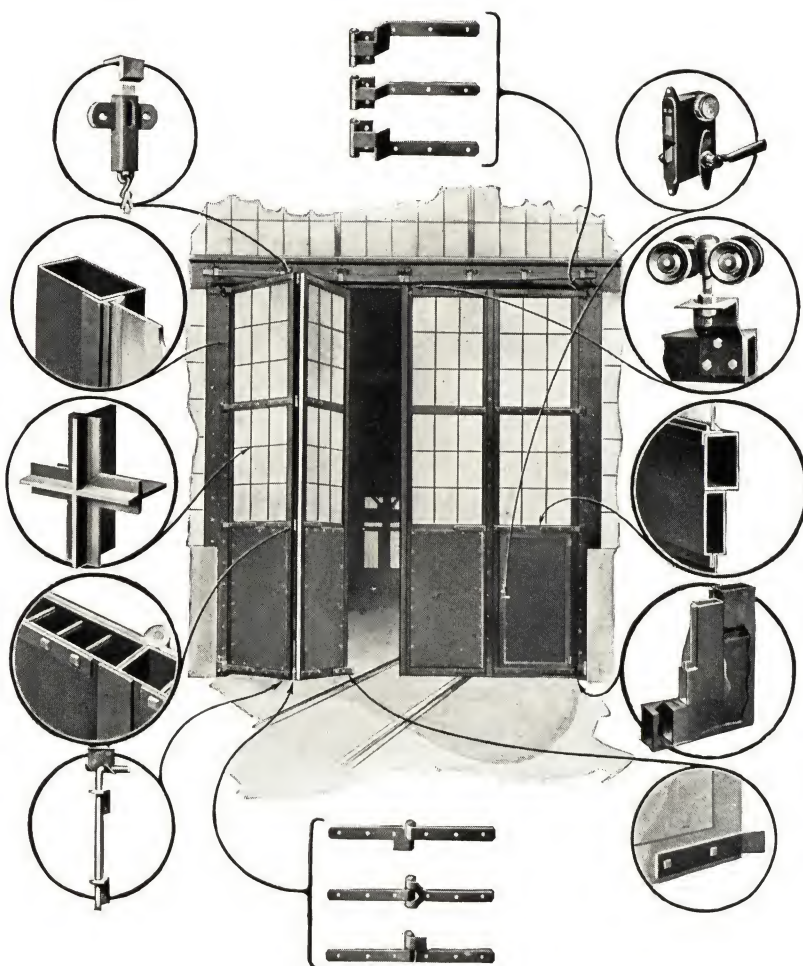
THESE doors are used extensively in railroad structures and other buildings requiring maximum height of door opening with minimum obstruction. They are particularly adaptable in extremely wide or high openings where a swing door would ordinarily be used.

In operation, the leaves fold against one another and since they cannot bind or jam, one person can open or close them easily. They are hung at the top from heavy four-wheel roller and ball-bearing swivel trolleys, running in a heavy channel track placed above the opening. They are shipped with complete hardware, such as track, brackets, trolleys, hinges, cane bolts and binders.

Stiles and rails are made from tubing. For Series 500HT, 4x2½ in. 13-gauge tube is standard; for Series 500LT, standard industrial tube 1¾x5 in. 14-gauge is used. The large tube is used when doors are for extremely large openings or for smaller doors subject to unusually rough and hard treatment. For openings receiving ordinary usage, the lighter tube will give years of uninterrupted service.

These doors are furnished with steel windows in the upper portion, although, if desired, they can be furnished with solid steel panels throughout.

Besides adding permanently good appearance to a building, Truscon Accordion Steel Doors afford greatly improved weather protection and long life. Maintenance has proved remarkably low because of their rigid construction and inherent permanent qualities.



SPECIFICATIONS, SERIES 500HT AND 500LT

1 General—All doors so indicated on the plans and elevations and called for in these specifications shall be Accordion Doors, either Series 500HT or Series 500LT, as manufactured by TRUSCON STEEL COMPANY of Youngstown, Ohio. No substitution shall be made without the written approval of the architect.

2 Material—(a) For Series 500HT, all stiles and rails shall be constructed of 13-gauge cold-rolled welded steel tubing 4x2½ in.

(b) For Series 500LT, all stiles and rails shall be constructed of 14-gauge, pressed steel tube 5x1¾ in.

(c) Sash panels shall be of Truscon standard design and made from Truscon specification new billet steel.

3 Construction—(a) All corners and intersections shall be welded and ground smooth. The weld must develop the full strength of the section.

(b) The upper portion shall be fitted with sash panels according to Truscon standard design.

(c) Series 500HT—The lower portion of the doors shall be fitted with 13-gauge patent leveled steel sheets.

(d) Series 500LT—The steel panels shall not be less than 18-gauge patent leveled steel sheets.

4 Frames—As shown on the drawings, steel channel frames for all door openings shall be furnished and installed by the contractor furnishing structural steel.

5 Hardware—(a) Doors shall be equipped with Truscon standard heavy steel hinges, track, brackets, trolleys and complete hardware.

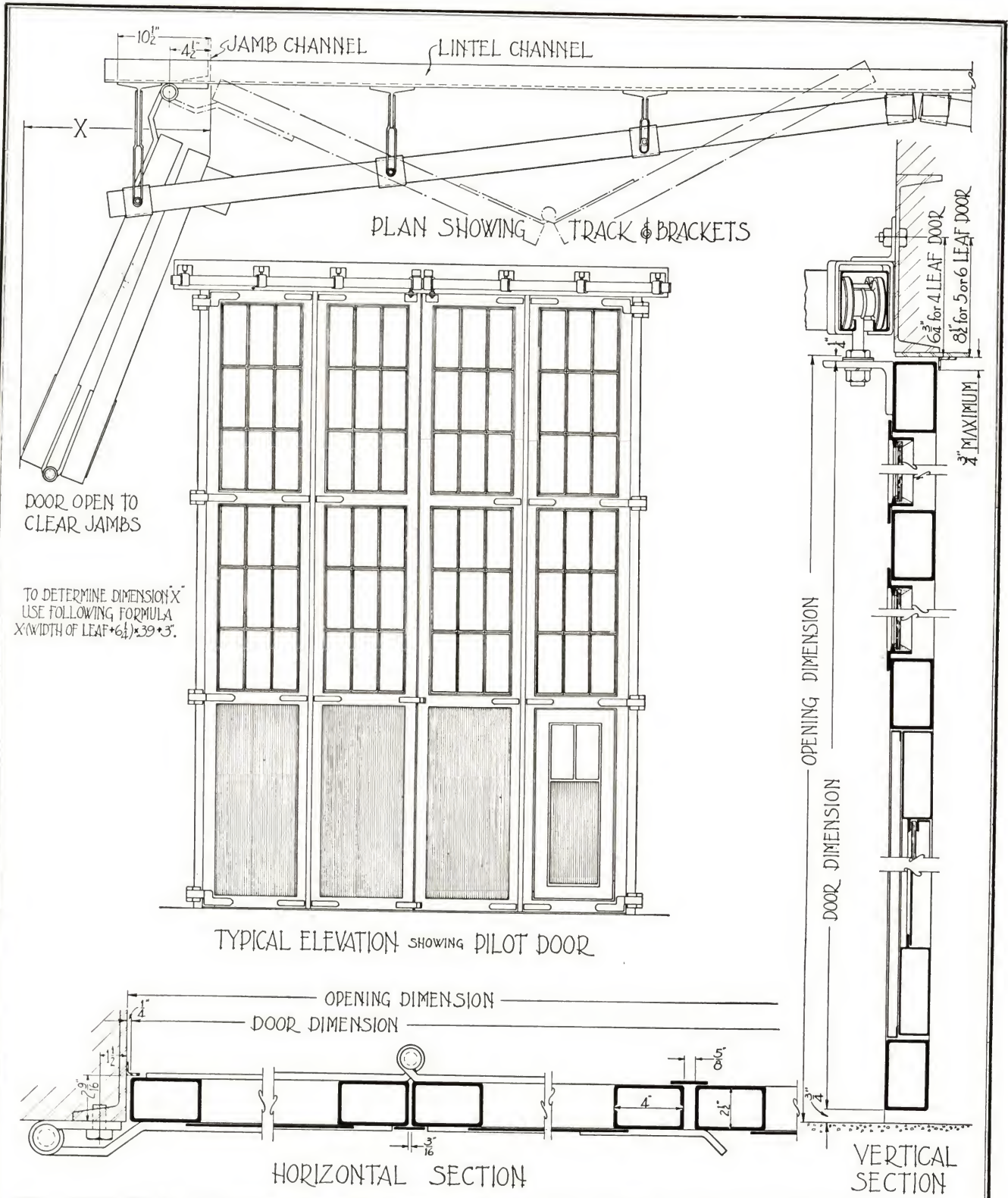
(b) Pilot doors, where shown, shall be fitted with cylinder spring latch and dead bolt heavy mortise cylinder lock or lever latch with padlock brackets (specify which) and heavy steel handles.

(c) Each opening having four leaves, two of which fold to each jamb, shall have two (2) cane bolts at the bottom and two (2) spring bolts at the top, one set for each pair of leaves.

(d) Standard astragals shall be furnished as weathering between all leaves.

6 Painting—All doors shall receive one coat of protective paint before shipment.

7 Erection—The erection of doors shall be performed by the door manufacturer.



TRUSCON STEEL COMPANY Youngstown, Ohio	TUBULAR RAIL CONSTRUCTION ACCORDION STEEL DOORS SERIES 500 H. T	PLATE No. J-4 OCTOBER, 1934
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OVERHEAD HANGAR STEEL DOORS

MORGAN TYPES

THE Overhead Morgan Type of hangar doors manufactured by TRUSCON STEEL COMPANY represent the latest design of a mechanically operated door for small, medium and large openings. This door is designed in three types, each covering a specific range of openings and built to operate most efficiently in the opening for which it is designed. All Morgan doors are perfectly counterbalanced in any operating position. Doors are usually electrically operated but in an emergency can be manually operated.

The three types of Overhead Morgan Doors are described below and detailed on pages 63, 64 and 65.



MORGAN TYPE NO. 1 DOOR

For the Smaller Openings

The Morgan Type No. 1 Door is designed especially for all openings not exceeding 26 ft. high. The horizontal components of the wind load, upon the door when it is operating, are carried by a built-up girder across the bottom of the door through rollers to the jambs of the opening. The door is divided horizontally into two leaves, the top leaf being hinged to the lintel and the bottom one hinged to the top leaf. As the door is lifted by the cables the door-leaves fold together, the top leaf inside the building behind the lintel and the bottom leaf partly inside and partly outside to form a canopy over the opening. The top leaf serves as a baffle to prevent the wind blowing in over the top of the door to damage the roof covering and to prevent the heat from escaping from the top of the hangar if the door is partially opened.

This door requires a minimum of head room and can be easily installed in hangars constructed with bow string trusses.

MORGAN TYPE NO. 2 DOOR

For Medium Size Openings

The Morgan Type No. 2 Door is practically the same design as the No. 1 Door but can be used in openings up to and including 36 ft. high. With this door the clear opening width can be unlimited by dividing the door into sections, each of which is independently operated and recommended not over 100 ft. in width. This door is designed to withstand a 20-pound wind load in any operating position. The system of bracing used on the inside of the door transmits the wind load from the face of the moving door to the structural frame overhead.

MORGAN TYPE NO. 3 DOOR

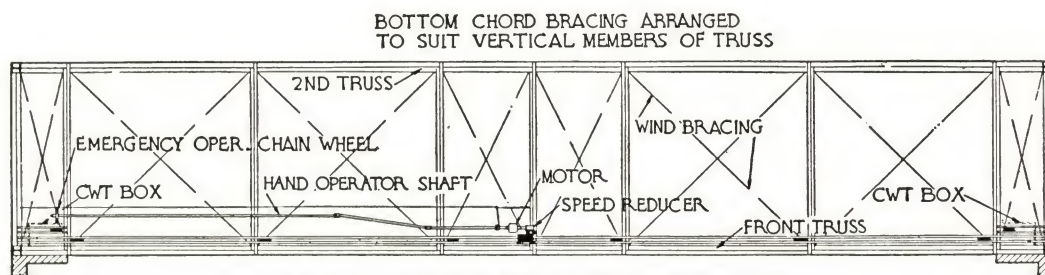
For Extremely Large Openings

Morgan Type No. 3 is designed and developed for hangars where the door opening is extremely high and wide. This type of door has no practical limits in height and offers many important advantages through its ingenious construction.

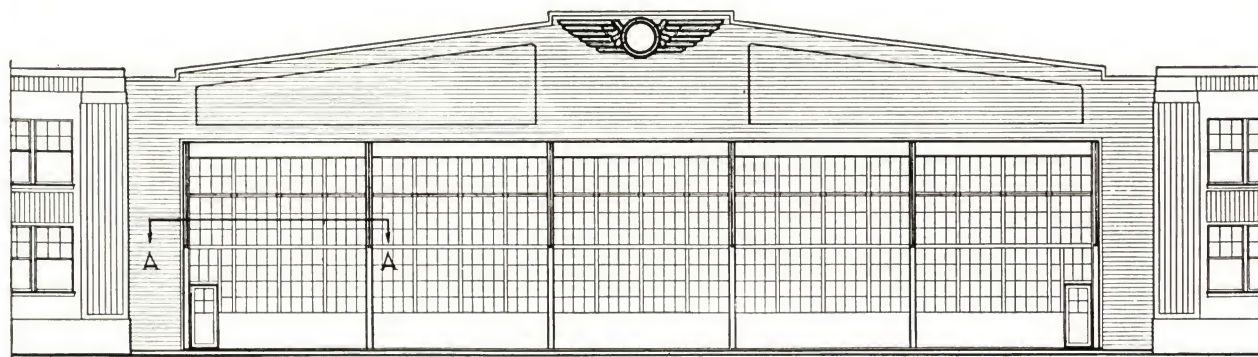
The operation of this door is a vertical lift swing movement. The bottom leaf rises vertically until it clears one half of the opening height and then both leaves swing out and up to form a canopy and leave the entire opening unobstructed. The operation of this door can be stopped completely at any stage of its opening, thus permitting the entrance or exit of small planes without opening the door to its extreme height. This not only saves time but prevents complete heat loss during inclement weather. The lower leaf moving upward in a vertical position permits the placing of planes closer to the opening on the apron than is possible with types No. 1 and No. 2.

The clearance lines are close to the door and no part of the door even in operation extends inside the hangar, making space available for the storage of planes close to the door. All operating mechanism is on the inside of the hangar.

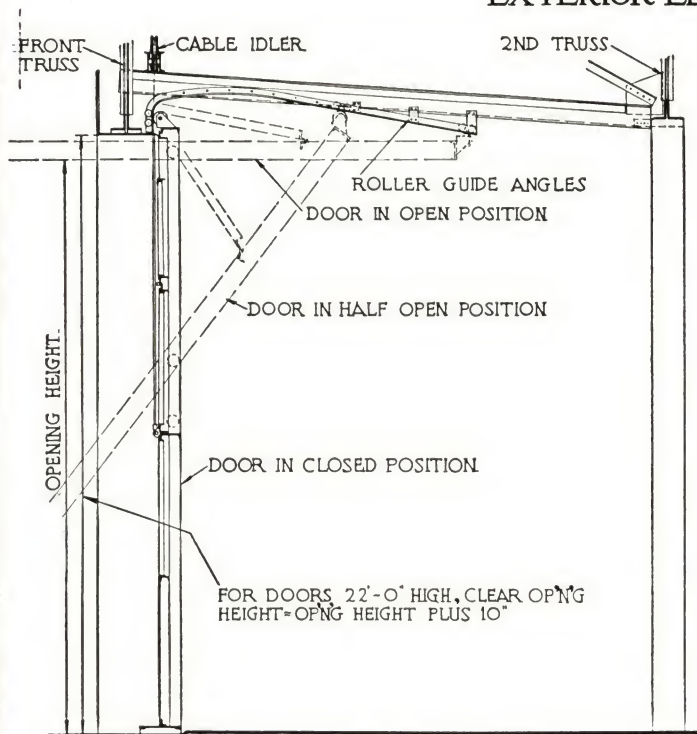




PLAN AT BOTTOM CHORD OF TRUSS

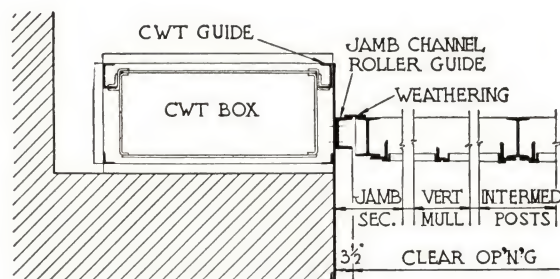


EXTERIOR ELEVATION



VERTICAL SECTION

NOTE: DOOR MOVEMENT IS CONTROLLED BY LIMIT SWITCHES. ~ THREE BUTTON CONTROL STATION AND REVERSING RELAY PANEL ARE LOCATED ON SIDEWALL ADJACENT TO JAMB OF OPENING, EXACT LOCATION TO BE DETERMINED BY ARCHITECT



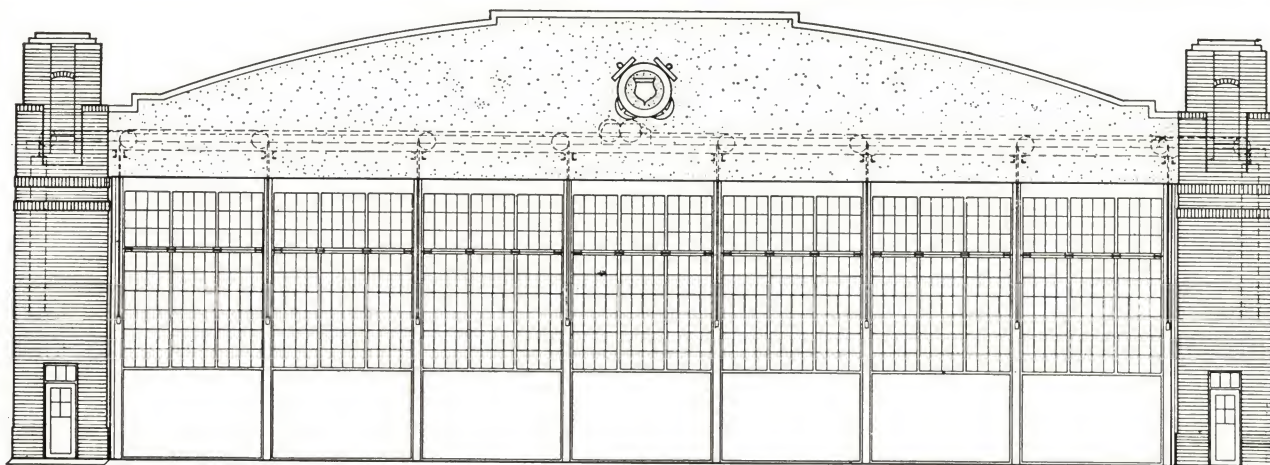
HORIZONTAL SECTION AT A-A

NOTE: ROLLER GUIDE CHANNELS AT THE JAMBS OF THE DOOR ARE NECESSARY TO KEEP THE LEAF IN ITS PROPER POSITION WHEN OPENING OR CLOSING ~ IF IT IS DESIRED TO DIVIDE THE OPENING INTO TWO OR MORE OPERATING UNITS, MOVABLE POSTS OR SOME OTHER MEANS MUST BE PROVIDED AT THE JAMBS OF THE UNITS TO MAINTAIN THEIR PROPER POSITION IN THE OPENING ~ THE DOOR SHOWN ON THIS PLATE DOES NOT REQUIRE THESE POSTS.

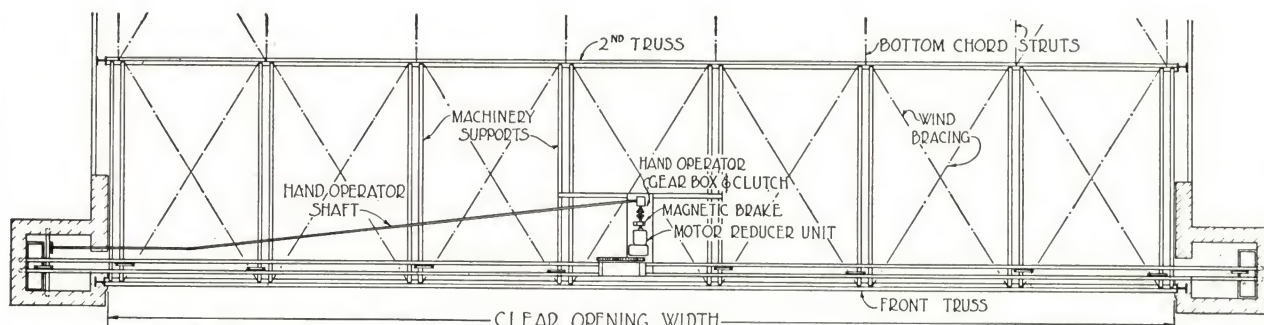
TRUSCON
STEEL COMPANY
Youngstown, Ohio

ELEVATION AND CONSTRUCTION DETAILS
OVERHEAD HANGAR STEEL DOORS
MORGAN TYPE No. 1

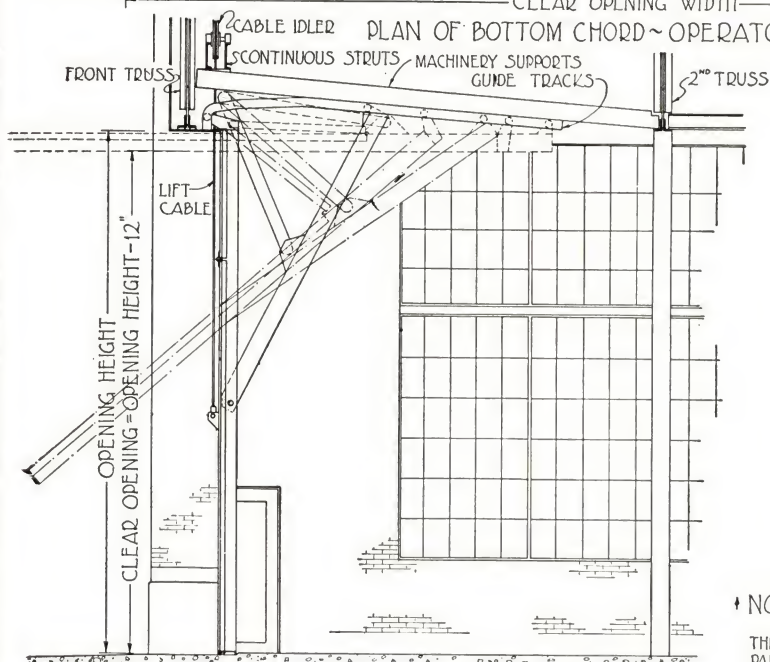
PLATE No.
J-40
OCTOBER, 1937



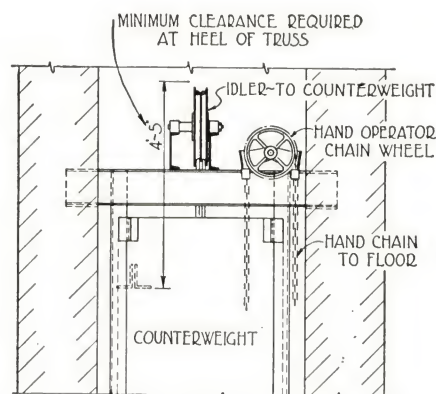
EXTERIOR ELEVATION



PLAN OF BOTTOM CHORD ~ OPERATOR & WEIGHT BOXES



VERTICAL SECTION ~ OPERATING CLEARANCES



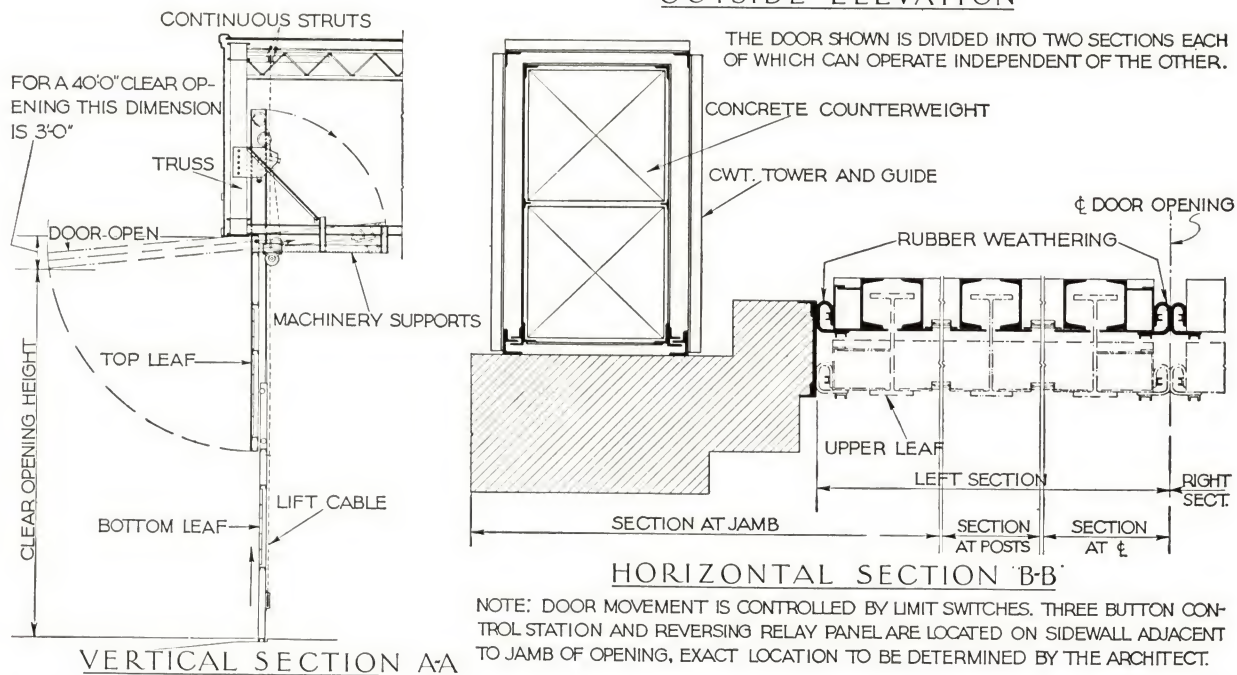
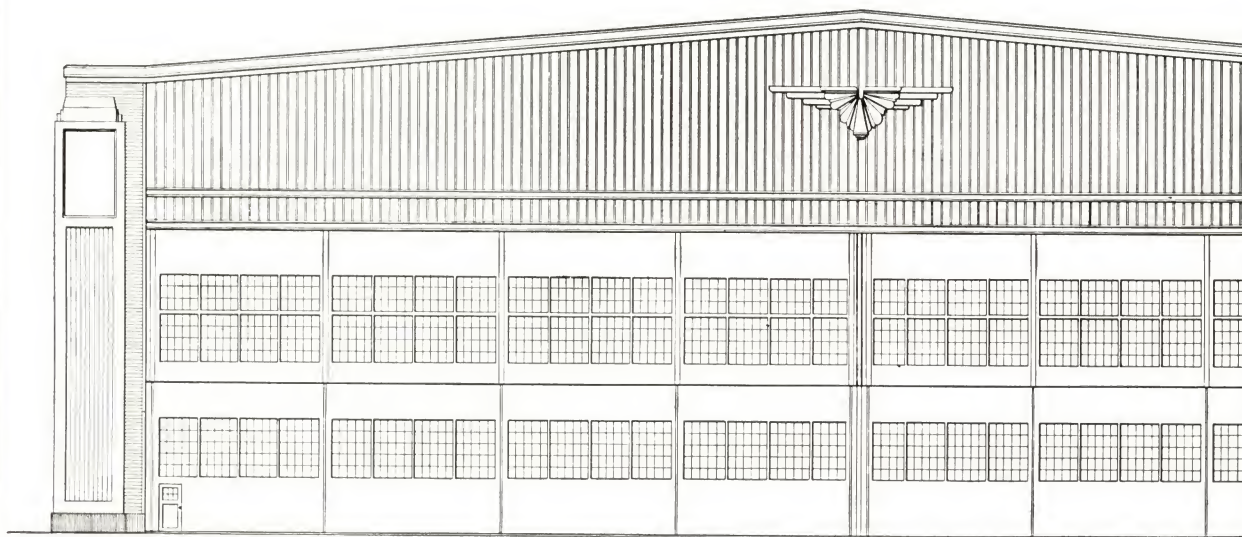
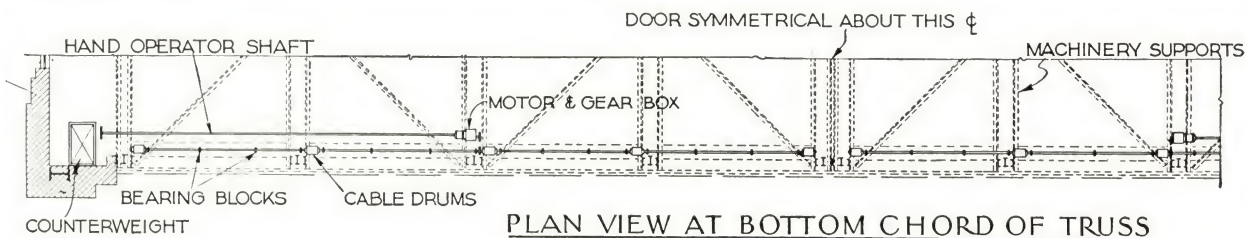
VERTICAL SECTION THRU TOWER
SHOWING WEIGHT BOX

NOTE:
DOOR MOVEMENT IS CONTROLLED BY LIMIT SWITCHES.
THREE BUTTON CONTROL STATION AND REVERSING RELAY
PANEL ARE LOCATED ON SIDEWALL ADJACENT TO JAMB OF
OPENING, EXACT LOCATION TO BE DETERMINED BY ARCHITECT.

TRUSCON
STEEL COMPANY
Youngstown, Ohio

ELEVATION AND CONSTRUCTION DETAILS
OVERHEAD HANGAR STEEL DOORS
MORGAN TYPE No. 2

PLATE No.
J-42
OCTOBER, 1937



TRUSCON
STEEL COMPANY
Youngstown, Ohio

ELEVATION AND CONSTRUCTION DETAILS
OVERHEAD HANGAR STEEL DOORS
MORGAN TYPE No. 3

PLATE No.
J-43
OCTOBER, 1937

METAL LATH PRODUCTS AND ACCESSORIES FOR

HERRINGBONE DOUBLEMESH LATH

The Most Rigid, Yet Smallest Mesh of Any Expanded Lath Made

Doublemesh has the smallest mesh of any expanded lath and at the same time is the most rigid. This rigidity is obtained by a series of parallel reinforcing ribs that run lengthwise of the sheet. The sheets require no stretching and do not sag between supports so that studs may be placed further apart without sacrifice to the strength of the walls.

Because of the design and of the care used in manufacture, Herringbone Doublemesh presents a smooth, even surface with no rough edges to cut the lather's hands or tear his clothes. A trowel of scratch coat goes on easier and reaches further.

Weight per square yard				Sizes of sheets, in.	Sheets per bundle	Yards per bundle
Painted	Galvanized	Copper-bearing	Toncan or Armco Iron			
2.75	...	...	...	24x96	9	16
3.0	...	3.0	...	24x96	9	16
3.4	3.4	3.4	3.4	24x96	9	16
4.0	...	...	...	24x96	9	16



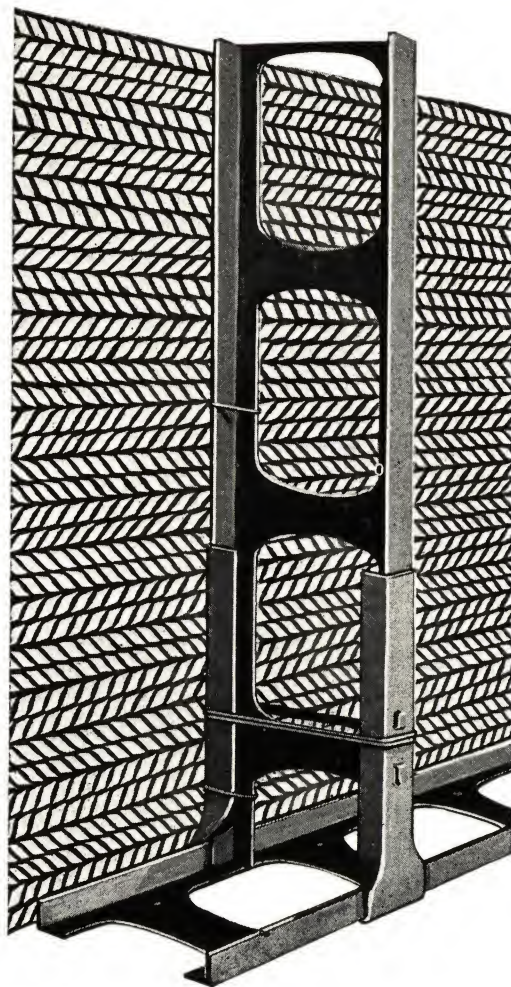
TRUSCON HOLLOW PARTITION STUDS

Truscon Hollow Partition Studs are fire-safe, provide excellent heat insulation, sound resistance and are rodent and termite proof. They will not swell nor warp and will resist impact, vibration or plaster cracking much more effectively than partitions of masonry or gypsum block.

When metal lath is attached to both sides of these studs, an ideal base for plaster is obtained. There is no necessity for cutting expensive chases for electrical conduits or pipes as the design of these studs provides maximum room for their passage without sacrificing the strength of the studs.

Due to the simplification and light weight of units, labor costs are materially reduced. The adaptability of Truscon Studs permits uninterrupted operation of all trades. After the studs are set, plumbing and electrical work can be started immediately. The partition is then lathed and plastered.

Truscon Hollow Partition Studs when plastered, weigh sixteen to twenty pounds per square foot, depending on the thickness of plaster grounds and consequently permit economical structural design without decreasing strength.

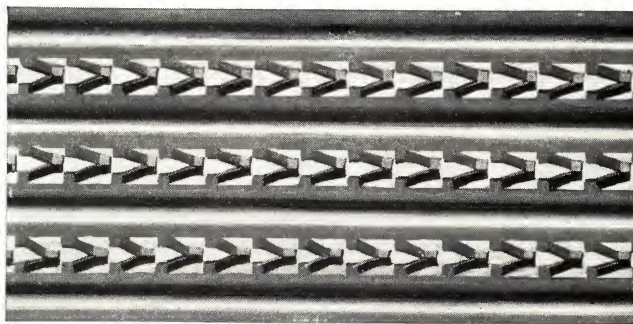


CRACKPROOF, FIRESAFE AND ECONOMICAL PLASTER BASES**"A" METAL LATH****This Rigid, Smooth-Surfaced Sheet Served as Both Plaster Base and Reinforcing**

Truscon "A" Metal Lath is a rigid, smooth surfaced sheet which serves as both plaster base and reinforcing. The mechanical key on "A" Lath is so ingeniously devised that it provides perfect reinforcement and effects a rigidity superior to ordinary types of flat rib lath.

The results of this perfected mechanical key and strong parallel rib of Truscon "A" Metal Lath assures a positive bond which makes it ideal for interior work of all kinds. The mechanical key actually provides for such a quick initial key that the economy of this lath becomes apparent at once.

Although rigid, Truscon "A" Metal Lath is also excellent for most types of form work.



Weight per square yard, lbs.	Sheets, in.	Sheets per bundle	Sq. yds. per Bundle
3.0	24 x 96	9	16
3.4	22 7/8 x 96	10	17

Furnished in black or copper bearing steel, painted.

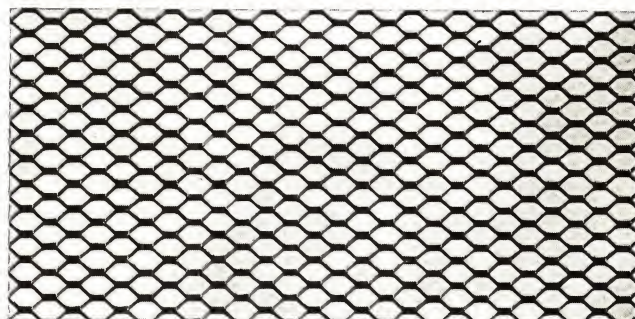
SMALL MESH DIAMOND LATH

PROPERTIES, DIAMOND LATH AND SMALL MESH DIAMOND LATH

Weight yard lbs.	Length sheet, in.	Width sheet, in.	Sq. yds. sheet	Sheets bundle	Sq. yds. bundle	Weight bundle, lbs.
2.2	96	27	2	10	20	44
2.5	96	27	2	10	20	50
3.0	96	27	2	10	20	60
3.4	96	27	2	10	20	68
		Galvanized				
2.5	96	27	2	10	20	50
3.4	96	27	2	10	20	68

Can be furnished in either open hearth or copper-bearing steel. All material excepting galvanized is painted.

Truscon Diamond Laths are considered the most practical types of diamond lath on the market. Sheets are trimmed exactly 8 ft. 1 in. in length, with edges absolutely straight. The diamonds are small size, pre-



venting workmen from wasting materials due to excessive pressure forcing plaster through on back side.

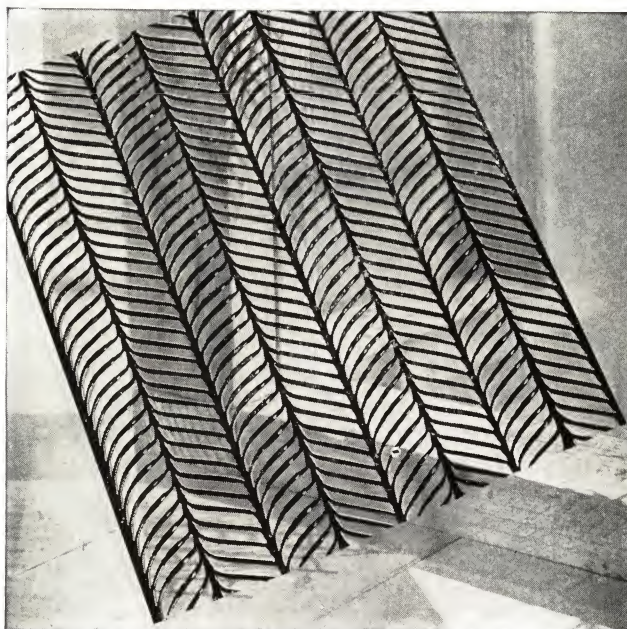
HERRINGBONE RIGID LATH**Same as Herringbone Doublemesh Except Having Longer Corrugations**

This lath has the same general advantages as "Doublemesh," the difference being in the size of the mesh. It has the same rigidity, the same interlocking edges and forms the same remarkable key.

The ribs form "shelves" which hold the plaster from falling in back, so that every bit applied is held in place. There is no waste with this lath. Because of its rigidity it does not sag or "belly" between supports but presents an unyielding surface to the trowel with no depressions.

When used for partitions, either solid or hollow, Herringbone Rigid Lath offers the same construction and erection economies as when used for ceilings. The spacing of the studs may be increased from 16 in. for the 2.5 lb. flat lath to 19 1/2 in. for the 3-lb. Herringbone.

Weight per square yard, lbs.				Sizes of sheets, in.	Sheets per bundle	Yards per bundle
Painted	Galva- nized	Copper- bearing	Toncan or Armco Iron			
2.2	.....	.....	.....	20 1/4 x 96	15	22 1/2
2.5	2.5	.....	.....	20 1/4 x 96	15	22 1/2
3.0	.....	3.0	.....	20 1/4 x 96	15	22 1/2
3.4	3.4	3.4	3.4	20 1/4 x 96	15	22 1/2



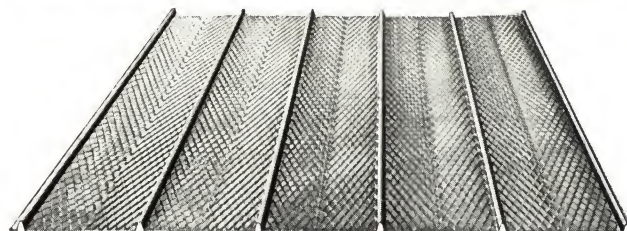
METAL LATH PRODUCTS AND ACCESSORIES (Continued)

$\frac{3}{8}$ " DIAMOND RIB LATH A Self-Furring Lath That Permits Wide Spacing of Supports

PROPERTIES, $\frac{3}{8}$ " DIAMOND RIB LATH

Weights per sq. yd.		Size of sheets, in.	Ribs spaced c-c, in.	Area of sheets per sq. yd.	Sheets per bundle	Yards per bundle
Painted	Copper bearing					
3.0	3.0	24x96	4.8	1-7/9	9	16
3.4	3.4	24x96	4.8	1-7/9	9	16
4.0	4.0	24x96	4.8	1-7/9	9	16

A self-furring lath with $\frac{3}{8}$ in. deep ribs, which permits wide spacing of supports. Used principally as a base for plaster on ceilings, straight-away partition work with channels and for exterior stucco. It is particularly recommended as a base for plaster under steel joists and as a reinforcement for concrete slabs



over steel joists. $\frac{3}{8}$ in. Diamond Lath is manufactured with the rib integral with the mesh. $\frac{3}{8}$ in. deep ribs spaced $4\frac{3}{4}$ in. on centers run full length of the sheet with the distance between the ribs spanned by rows of small size diamonds.

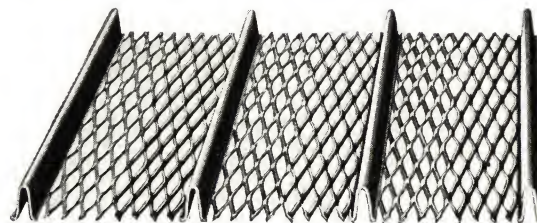
SELF-SENTERING RIB EXPANSION METAL LATH

WEIGHTS AND SECTIONAL AREAS

Painted steel weight, per sq. ft.	Effective sectional area, per ft. of width	Standard lengths, ft.
.50 lbs.	.1440 sq. in.	8, 10 and 12
.60 lbs.	.1688 sq. in.	8, 10 and 12
.75 lbs.	.2150 sq. in.	8, 10 and 12

Galvanized, Copper-bearing, or Armco Self-Sentering on mill shipment, minimum of five tons one weight and length.

Self-Sentering is a ribbed expansion metal for concrete reinforcing and miscellaneous firesafe construction. It serves as both form and reinforcement for



concrete floor work and as a combined steel lath and studding for walls and partitions.

$\frac{3}{4}$ " HY-RIB CONCRETE REINFORCEMENT FOR FLOORS

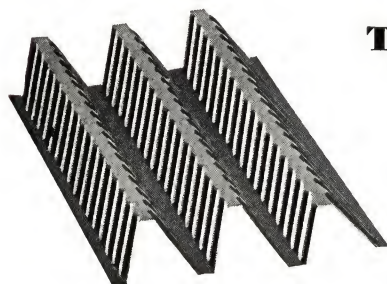


Truscon $\frac{3}{4}$ in. Hy-Rib is a concrete reinforcement for floors, roofs, tanks, arches and other construction, where expensive wood forming is usually required.

PROPERTIES

Weight per sq. ft., lbs.	Height of ribs, in.	Ribs spaced c-c, in.	No. Ribs per sheet	Width of sheet, in.	Effective sectional area per ft. of width, sq. in.
.50	$\frac{3}{4}$	4	8	28	.1407
.60	$\frac{3}{4}$	4	8	28	.1618
.75	$\frac{3}{4}$	4	8	28	.2100

Can be furnished in either Copper-Bearing or Open Hearth Steel—all painted.



TRUSSIT—A SPECIALIZED BUILDING PRODUCT

A specialized building product, designed for the purpose of reinforcing and forming fire-resistive concrete walls and partitions. The use of Trussit as a reinforcement for solid exterior walls gives a construction in which the reinforcing is centrally located in the wall, producing a slab of uniform strength throughout. Walls are quickly erected without forms, cement plaster being applied to the Trussit.

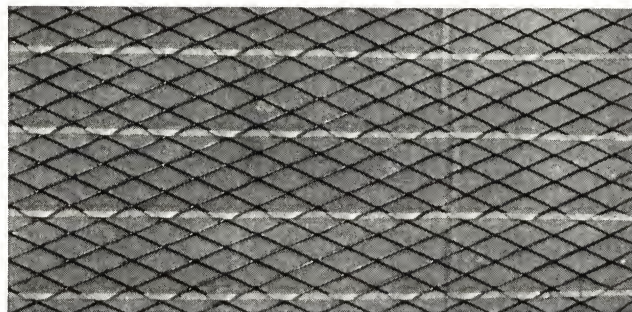
equally on both sides. Form marks are eliminated and a pleasing effect is produced on each face of wall.

	Length, ft.	Width, in.	Weight per sq. ft.
Painted.....	8, 10, 12	19	.57, .62 and .83 lbs.
Galvanized.....	8, 10, 12	19	.68, .83 lbs.
Toncan or Armco	8, 10, 12	19	.57, .62 and .83 lbs.

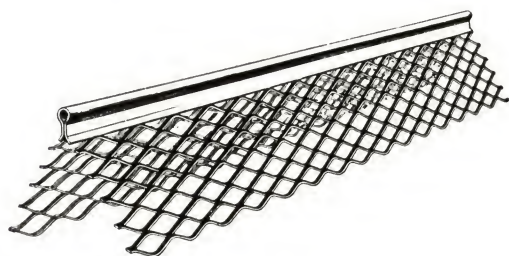
TRUSCON INSULMESH

An exclusive plaster base, consisting of expanded metal which is firmly fastened to a specially treated, $\frac{3}{8}$ -in. thick waterproofed backing that insulates against heat, cold and sound. Adhesive strips hold the mesh in place until the sheets are erected, then the nails or staples used to attach the Insulmesh to the studs or joists carry the load.

Insulmesh sheets are 27x48 in., equal to one square yard per sheet.

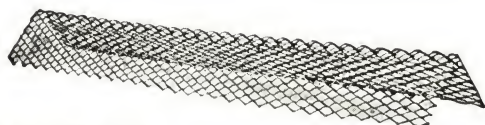


METAL LATH ACCESSORIES



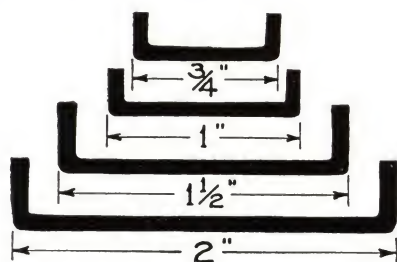
EXPANDED CORNER BEAD

Expanded corner bead weighs 0.21 pounds per lin. ft. furnished in 6, 7, 8, 9, 10 and 12-ft. lengths, bundled 10 pieces to the bundle. It can be furnished cut from zinc strip if desired.



CORNERITE

Cornerites are used for plaster base at inside corners. Flanges are 4 in. wide, sheets 8 ft. 1 in. long, bundled in lots of 25 pieces or 400 ft. Protected with a coat of black asphalt paint.



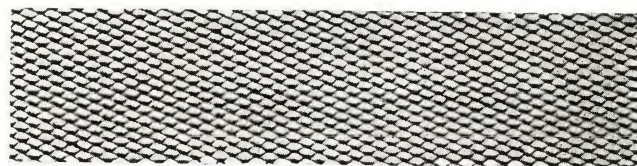
COLD ROLLED CHANNELS

Sizes, $\frac{3}{4}$, 1, $1\frac{1}{2}$ and 2 in.
Weight per lineal foot, .276, .332, .442 and .553 lb.
No. 16 gauge (thickness .065 in.).
 $\frac{3}{4}$ and 1 in. shipped packed in bundles of 25 channels, and $1\frac{1}{2}$ and 2 in., 10 in a bundle.
 $\frac{3}{4}$ -in. square channel manufactured from 18 gauge steel.



TRUSCON TIE WIRE

Truscon Tie Wire is furnished in 16 or 18-gauge galvanized or black wire. Comes in rolls 20 in. in diameter. Also furnished in hanks.



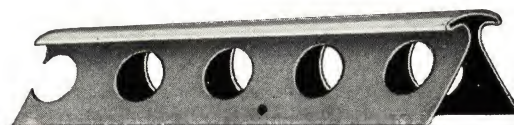
TRUSCON STRIP-ITE

Manufactured from 2.2 lb. Diamond Lath, furnished in 3 and 6 inch widths, 8 ft. 1 in. long. Shipped in bundles of 50 pieces or 400 linear feet. 3 in. Strip-ite weighs 50 lbs. to the bundle.



RIB STEEL CORNER BEAD

Lengths, 6, 8, 9, 10 and 12 ft.
Packed 10 pieces to bundle—10 bundles to crate.
Crate weight, 20 lbs. per 1000 ft. Manufactured from 26 gauge high grade steel.



BULL NOSE CORNER BEAD

$\frac{3}{4}$ -in. radius. Medium length flange. 24 Gauge.
Shipping weight, approximately 420 lbs. per 1000 ft.
Standard lengths, 6, 7, 8, 9, 10, 11 and 12 ft.



TRUSCON WIDE FLANGED CORNER BEAD

Weight, 330 lbs. per 1000 ft. Manufactured from 26-gauge best grade steel and furnished in standard lengths 6, 7, 8, 9, 10 and 12 ft., packed 10 pieces to the bundle.

"O-T" OPEN TRUSS STEEL JOISTS

FOR ECONOMICAL AND FIRE RESISTANT FLOORS

DESIGNED and manufactured in accordance with the specifications of the Steel Joist Institute and the Simplified Practice Recommendations (S.P.R. 94-30) on Open Web Steel Joists as issued by the U. S. Department of Commerce, Bureau of Standards.

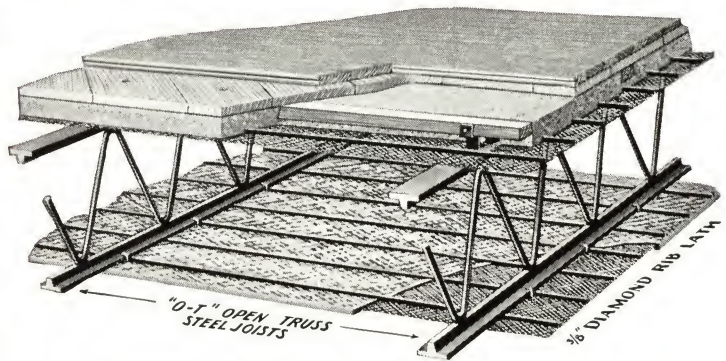
To meet the demand for economical, light weight and fire resistant floors, Truscon has developed the "O-T" Open Truss Steel Joist which is designed according to the best engineering practice and offers many advantageous and distinctive features. In effect, the entire design is unusually efficient as well as exceptionally economical of materials.

Fundamentally, the Truscon "O-T" Open Truss Steel Joist is a Warren truss having top and bottom chords of wide tee-shaped members to provide the greatest resistance to buckling strains. The bottom tee is continuous to the bearings, where it is welded with the web member and the top chord. Web members are continuous from end to end so that stresses are transmitted perfectly. High pressure electric welding is used to make positive connections at all joints.

The underslung design of the bearing permits maximum headroom under the supporting girders. The open web allows the passage of pipes and conduits.

ADAPTABILITY

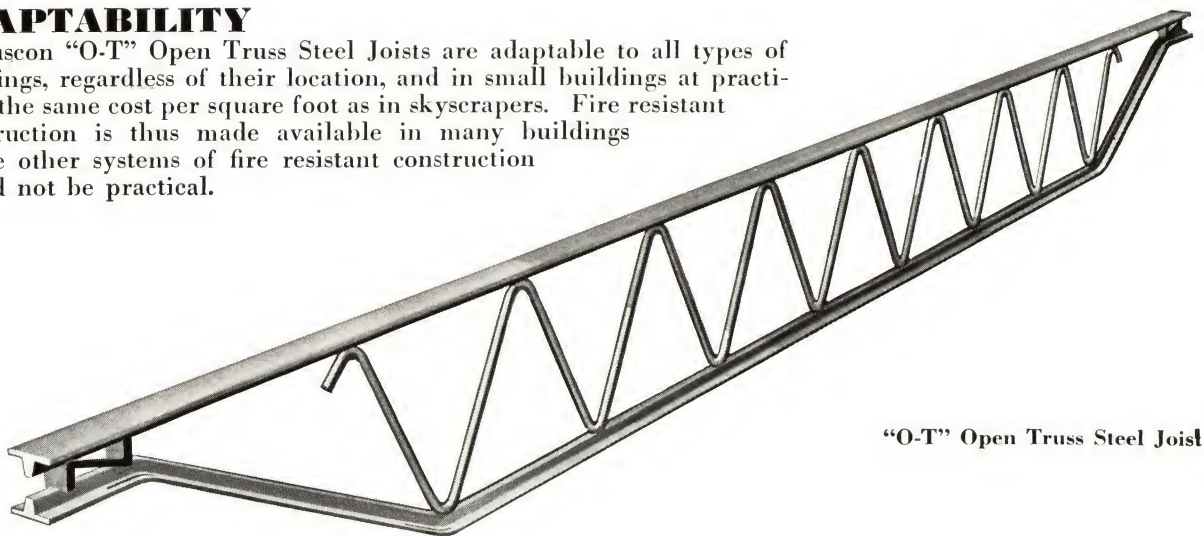
Truscon "O-T" Open Truss Steel Joists are adaptable to all types of buildings, regardless of their location, and in small buildings at practically the same cost per square foot as in skyscrapers. Fire resistant construction is thus made available in many buildings where other systems of fire resistant construction would not be practical.



Truscon "O-T" Open Truss Steel Joist Construction

With concrete slab and wood sub and finished floors secured by means of Screeds placed at right angles to the Joists and elevated to provide for concrete underneath.

In practical use Truscon "O-T" Open Truss Steel Joists are very simple to install, being completely shop fabricated and reaching the job ready for placing. Each joist is marked to correspond with the erection diagram, thus greatly simplifying and speeding construction work. Only the highest quality open hearth steel is used. Thorough tests under extreme loadings have demonstrated their all-around dependability.

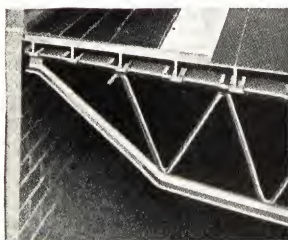


"O-T" Open Truss Steel Joist

DETAILS OF CONSTRUCTION "O-T" JOISTS

Roof Purlins

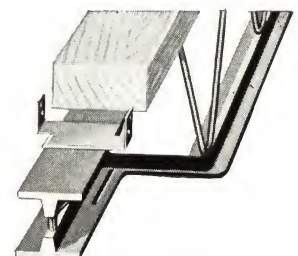
Open Truss Steel Joists have proved to be very economical and practical for use as roof purlins supporting steel deck roofs. The method of attaching the roof to the steel joists is very simple and positive, as shown in illustration.



Roof Purlins

Nailing Screenshot

Occasionally, it is desired to attach a wood roof deck to Truscon "O-T" Open Truss Steel Joists used as roof purlins. Nailing screeds are required in this construction and they may be attached directly over the joists by means of screed clip as shown in illustration.



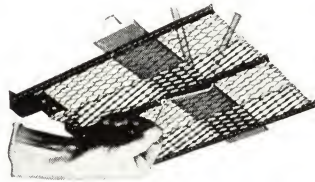
Screenshot Clip

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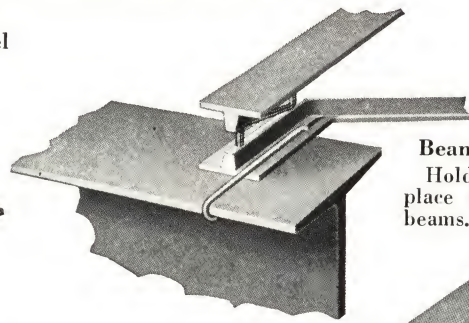
"O-T" STEEL JOIST ACCESSORIES



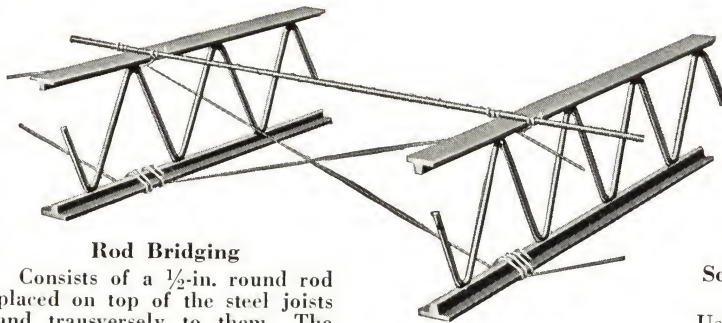
Bottom Chord Extension
Easily attached after the steel joists are in place.



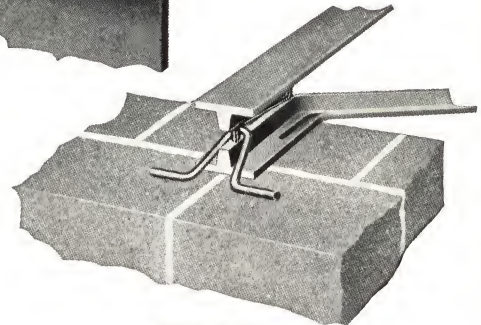
Lath Clips
Made in different sizes to meet the different sizes of joist members. When attaching the ceiling lath, the clips should straddle the lath rib.



Beam Anchor No. 3
Holds the joists in place on structural steel beams.



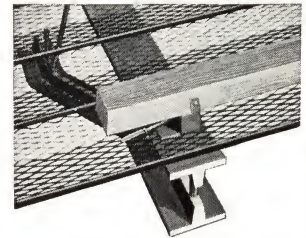
Rod Bridging
Consists of a $\frac{1}{2}$ -in. round rod placed on top of the steel joists and transversely to them. The $\frac{3}{8}$ -in. diagonal members are then applied and wound tightly around the transverse rod and the bottom chords of joists by means of a bridging tool provided for this purpose. This bridging is very efficient and is easily installed.



Wall Anchor No. 5
Affords additional bond between floor and wall construction when wall is of such a height or nature as to be not self-sustaining.

Screed Clips Nos. 5, 6, 7 and 8

Used when it is desired to elevate the screeds so that concrete can be poured beneath them. A lath clip of proper size is used to hold the screed clip in place.



SPECIFICATIONS

For "O-T" Open Truss Steel Joist Floor and Roof Construction with Concrete Slab

General—Where Steel Joist floor construction is specified, it shall be understood to mean Truscon "O-T" Steel Joists of the size and spacing as shown on the drawings, together with a structural concrete slab over the joists supported by metal lath firmly attached to the joists.

The Steel Joists shall be made of hot rolled steel shapes fabricated by high pressure electric automatic welding. The web member shall be a continuous plain round bar of constant diameter bent cold. The chords shall be tee-shaped sections, the top chord being straight and the bottom chord bent up to form the bearing. The design and details of all members shall meet the requirements of the Steel Joists Institute Specifications.

Painting—All steel joists shall be spray painted with one shop coat of good metal protective paint.

Slab Reinforcement—The top concrete slab shall be reinforced and supported by $\frac{3}{8}$ in.* Rib Lath weighing not less than 4.0 lbs. per square yard; the lath to be placed with the ribs up and at right angles to the joists. The lath shall be attached to the top of the joists by means of lath clips spaced 8 in. apart. Where the floor finish is other than wood, the structural slab shall be reinforced with a 10-gauge 6x6 in. welded steel fabric.

*For joists spaced over 24 in. apart $\frac{3}{4}$ in. .50 lb. Hyrib must be used.

Bearing and Anchorage—Joists shall have a minimum bearing of 4 in. on concrete or masonry and $2\frac{1}{2}$ in. on steel. Every third joist bearing on masonry walls shall be anchored. Joists parallel to walls shall have the top and bottom chords anchored at the line of the rows of bridging. Every joist bearing on structural steel beams shall be fastened by an anchor (or welding).

Bridging—As soon as joists have been erected and before the application of construction loads, joists shall be bridged, with a tension type of bridging consisting of a $\frac{1}{2}$ -in. rod placed on top of the joists and transversely to them and supplemented by $\frac{3}{8}$ in. diagonally placed rods securely wound to both the transversely placed rod and the bottom chords of joists. For spans up to 14 ft. 0 in. one row of bridging is required, two rows between 14 ft. 0 in. and 21 ft. 0 in., and three rows over 21 ft. 0 in.

Ceilings—Where directly attached ceiling occurs, Bottom Chord Extensions shall be provided.

Wood Floors—Where wood floors are specified, screed clips shall be secured to the joists to receive 2x1 in. screeds placed at right angles to the joists and spaced 16 in. apart. The clip shall raise the screed 1 in. above the joists.

Note: The Steel Joists Institute Specification limits the spacing of joists to 24 in. for floors, 30 in. for roofs having a poured concrete slab and 7 ft. for roofs having a steel deck or wood roof.

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"O-T" STEEL JOIST LOADING TABLE TABLE ONE BELOW

The following table gives the TOTAL safe uniformly distributed load carrying capacities of Truscon "O-T" Open Truss Steel Joists at various spacings.

Clear Span	Joist Type	Total Safe Load Pounds	TOTAL SAFE LOADS IN POUNDS PER SQUARE FOOT FOR VARIOUS JOIST SPACINGS																	
			12"	14"	16"	17"	18"	19"	20"	21"	22"	23"	24"	30"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"	7'-0"
6'-0"	81	3200	530	457	400	376	356	337	320	305	291	278	267	213	178	153	134	106	89	76
7'-0"	81	2810	402	344	301	283	268	254	241	229	219	209	202	160	134	115	101	80	67	57
8'-0"	81	2460	308	264	231	217	205	194	184	176	168	160	154	123	103	88	77	61	51	44
	82	3800	475	407	356	335	316	300	285	271	259	248	238	190	158	136	119	95	79	68
9'-0"	81	2180	243	208	182	171	162	153	145	138	132	127	121	97	81	69	61	48	40	34
	82	3800	422	362	316	298	282	266	254	242	230	220	211	169	141	121	106	84	70	60
10'-0"	81	1970	197	169	148	139	131	125	118	113	108	103	99	79	66	57	50	39	33	28
	82	3500	350	300	263	247	233	221	210	200	191	183	175	140	117	100	88	70	58	50
	102	3800	380	326	285	268	253	240	228	217	207	198	190	152	127	109	95	76	63	54
	103	3900	390	334	292	275	260	246	234	223	213	203	195	156	130	112	98	78	65	56
	104	4400	440	377	330	312	293	278	264	252	240	230	220	176	147	126	110	88	73	63
11'-0"	81	1780	162	139	121	114	108	102	97	92	89	85	81	65	54	46	41	32	26	22
	82	3180	289	248	217	205	193	183	174	165	158	151	145	116	97	83	73	58	48	41
	102	3800	346	297	259	244	230	218	208	197	189	180	173	138	115	99	87	69	57	49
	103	3900	355	304	266	250	236	224	213	202	194	185	178	142	118	101	89	71	59	50
	104	4400	400	343	300	283	267	253	240	228	218	208	200	160	134	114	100	80	67	57
12'-0"	81	1635	137	117	102	96	91	86	82	78	74	71	68	55	46	39	34	28	23	19
	82	2920	243	208	183	172	162	154	146	139	133	127	122	98	81	70	61	49	40	35
	102	3500	292	250	219	206	194	184	175	167	159	152	146	117	97	84	73	58	48	42
	103	3900	325	279	244	230	217	205	195	186	177	170	163	130	109	93	82	65	54	46
	104	4400	367	314	275	259	244	232	220	210	200	191	183	147	122	105	92	73	61	52
	123	4400	367	314	275	259	244	232	220	210	200	191	183	147	122	105	92	73	61	52
	124	4600	384	329	288	271	256	242	230	219	209	200	192	153	128	110	96	76	64	55
	125	5000	417	358	312	294	278	263	250	238	228	218	208	167	139	119	104	83	69	59
	126	5400	450	386	338	318	300	284	270	257	246	235	225	180	150	129	113	90	75	64
	102	3500	292	250	219	206	194	184	175	167	159	152	146	117	97	84	73	58	48	42
	103	3900	325	279	244	230	217	205	195	186	177	170	163	130	109	93	82	65	54	46
	104	4400	367	314	275	259	244	232	220	210	200	191	183	147	122	105	92	73	61	52
13'-0"	81	1510	116	100	87	82	78	73	70	66	63	61	58	46	39	33	29	23	19	16
	82	2690	207	177	155	146	138	131	124	118	113	108	103	83	69	59	52	41	34	29
	102	3230	248	213	187	176	166	157	149	142	136	130	124	99	83	71	62	49	41	35
	103	3900	300	257	225	212	200	190	180	172	164	157	150	120	100	86	75	60	50	43
	104	4400	338	290	254	239	225	214	203	193	184	177	169	135	113	97	85	67	56	48
	123	4400	338	290	254	239	225	214	203	193	184	177	169	135	113	97	85	67	56	48
	124	4600	354	303	265	250	236	224	212	202	193	185	177	142	118	101	89	71	59	50
	125	5000	384	330	288	272	256	243	231	220	210	201	192	154	129	110	96	77	64	55
	126	5400	415	356	312	293	277	262	249	237	226	217	208	166	139	119	104	83	69	59
14'-0"	81	1400	100	86	75	71	67	63	60	57	55	52	50	40	34	29	24	19	16	13
	82	2500	178	153	134	126	119	113	107	102	98	93	89	71	60	51	45	35	30	25
	102	3000	214	184	161	152	143	135	129	123	117	112	107	86	72	62	54	43	36	31
	103	3900	278	239	209	197	186	176	167	159	152	145	139	111	93	80	70	55	46	40
	104	4400	314	270	236	222	210	199	189	180	172	164	157	126	105	90	79	63	52	45
	123	4380	313	268	235	221	209	198	188	179	171	163	156	125	105	90	78	62	52	45
	124	4600	328	282	246	232	219	208	197	188	179	171	164	131	110	94	82	65	55	47
	125	5000	357	306	268	252	238	226	214	204	195	187	179	143	119	102	90	71	59	51
	126	5400	386	331	289	272	257	244	232	220	210	201	193	154	129	110	97	77	64	55
	145	5800	414	355	311	292	276	262	248	237	226	216	207	166	138	119	104	83	69	59
	146	6200	443	380	332	313	296	280	266	253	242	231	222	177	148	127	111	88	74	63
	147	6800	486	416	364	343	324	307	292	278	265	254	243	194	162	139	122	97	81	69
15'-0"	81	1310	87	75	66	62	58	55	52	50	48	46	44	35	29	24	19	16	13	10
	82	2330	155	133	116	110	104	98	93	89	85	81	78	62	52	44	39	31	25	20
	102	2810	187	161	141	132	125	118	112	107	102	98	94	75	63	54	47	38	31	25
	103	3640	243	208	182	172	162	153	146	139	133	127	122	97	81	69	61	49	41	35
	104	4400	293	252	220	207	196	185	176	168	160	153	147	117	98	84	73	59	49	42
	123	4090	272	234	204	192	182	172	163	156	148	142	136	109	91	78	68	55	46	39
	124	4600	307	263	230	217	204	194	184	175	167	160	153	123	102	88	77	61	51	44
	125	5000	333	286	250	235	222	210	200	191	182	174	167	133	111	96	84	67	56	48
	126	5400	360	308	270	254	240	227	216	206	196	188	180	144	120	103	90	72	60	52
	145	5800	387	332	290	273	258	244	232	221	211	202	193	155	129	111	97	78	64	56
	146	6200	413	354	310	292	276	261	248	236	225	216	207	165	138	118	104	83	69	59
	147	6800	454	389	340	320	302	286	272	259	248	237	227	181	151	130	114	91	75	65

For floor construction, joists should not be spaced over 24 in. o. c.

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COVERING PAGES 72, 73 AND 74.

The weight of DEAD loads must in all cases be deducted to determine the LIVE load carrying capacities of the Joists.

Clear Span	Joist Type	Total Safe Load Pounds	TOTAL SAFE LOADS IN POUNDS PER SQUARE FOOT FOR VARIOUS JOIST SPACINGS																		
			12"	14"	16"	17"	18"	19"	20"	21"	22"	23"	24"	30"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"	7'-0"	
16'-0"	81	1230	77	66	58	54	51	49	46	44	42	40	38	31	.....	.....	.....	.....	.....	.....	
	82	2190	137	117	103	97	91	86	82	78	75	71	68	55	46	39	34	.....	.....	.....	
	102	2630	164	141	123	116	110	104	99	94	90	86	82	66	55	47	41	33	.....	.....	
	103	3420	213	182	160	150	142	134	128	122	116	111	106	85	71	61	53	43	35	30	
	104	4170	260	223	195	184	173	164	156	149	142	136	130	104	87	74	65	52	43	37	
	123	3840	240	206	180	170	160	152	144	137	131	125	120	96	80	69	60	48	40	34	
	124	4600	287	246	216	203	192	182	172	164	157	150	144	115	96	82	72	58	48	41	
	125	5000	312	268	234	221	208	197	187	178	170	163	156	125	104	89	78	63	52	44	
	126	5400	337	289	253	238	225	213	202	193	184	176	169	135	113	97	85	68	57	48	
	145	5800	363	311	272	256	242	229	218	208	198	189	182	145	121	104	91	73	61	52	
	146	6200	387	332	290	274	258	245	233	222	212	202	194	155	129	111	97	78	64	56	
	147	6800	425	364	319	300	283	268	255	243	232	222	213	170	142	122	107	85	71	61	
	166	6100	400	343	300	282	266	253	240	228	218	208	200	160	133	114	100	80	67	57	
	167	7200	450	386	338	318	300	284	270	257	246	235	225	180	150	129	113	90	75	64	
17'-0"	102	2470	145	125	109	103	97	92	87	83	79	76	73	58	48	42	36	29	.....	.....	
	103	3220	189	162	142	134	126	120	114	108	103	99	95	76	63	54	47	38	32	.....	
	104	3920	230	197	173	162	153	145	138	132	126	120	115	92	77	66	58	46	38	33	
	123	3610	212	182	159	150	142	134	127	121	116	111	106	85	71	61	53	43	35	30	
	124	4510	265	227	199	187	177	168	159	152	145	139	133	106	88	76	66	53	44	38	
	125	5000	294	252	220	208	196	186	177	168	161	154	147	118	98	84	74	59	49	42	
	126	5400	318	272	238	224	212	201	191	182	173	166	159	127	106	91	80	64	53	45	
	145	5800	342	292	256	241	228	215	205	195	186	178	171	137	114	98	86	69	57	49	
	146	6200	365	313	273	258	243	230	219	209	199	191	183	146	122	105	92	73	61	52	
	147	6800	400	343	300	282	267	253	240	229	219	209	200	160	134	115	100	80	67	57	
	166	6400	376	323	282	266	251	238	226	215	205	197	188	151	126	108	94	76	63	54	
	167	7200	424	363	318	299	283	268	255	242	231	221	212	170	142	121	106	85	71	60	
	18'-0"	102	2330	129	111	97	92	86	82	78	74	71	68	65	52	43	37	32			
		103	3040	169	145	127	119	113	107	101	97	92	88	85	68	56	48	42	34		
104		3710	205	177	155	146	138	130	124	118	113	108	103	83	69	59	52	41	34	30	
123		3410	189	163	142	134	126	120	114	108	103	99	95	76	63	54	47	38	32	27	
124		4260	236	203	178	167	158	150	142	135	129	124	119	95	79	68	59	47	39	34	
125		5000	278	238	208	196	185	175	167	159	152	145	139	111	93	79	70	56	46	40	
126		5400	300	257	225	212	200	190	180	172	164	157	150	120	100	86	75	60	50	43	
145		5780	321	275	240	227	214	203	193	184	175	168	161	129	107	92	81	65	54	46	
146		6200	344	295	259	243	230	218	207	197	188	180	172	138	115	99	86	69	58	49	
147		6800	378	324	284	267	252	239	227	216	206	197	189	151	126	108	95	76	63	54	
166		6400	356	305	267	251	237	225	213	203	194	186	178	143	119	102	89	72	60	51	
167		7200	400	343	300	282	267	253	240	229	219	209	200	160	134	115	100	80	67	57	
19'-0"		102	2210	116	100	87	82	78	74	70	66	63	61	58	47	39	33	29			
		103	2880	151	130	114	107	101	96	91	87	83	79	76	61	51	43	38	30		
	104	3510	184	159	139	131	123	117	111	106	101	97	93	74	62	53	46	37	31	.....	
	123	3230	170	146	128	120	113	107	102	97	93	89	85	68	57	49	42	34	28	.....	
	124	4040	212	183	160	150	142	135	128	122	116	111	106	85	71	61	53	43	35	.....	
	125	4990	263	225	197	186	175	166	158	150	143	137	132	105	88	75	66	53	44	38	
	126	5400	284	244	214	201	190	180	171	162	155	148	142	114	95	81	71	57	47	41	
	145	5480	288	247	217	204	193	183	173	165	158	151	145	115	96	83	72	58	48	41	
	146	6200	326	280	245	230	218	206	196	187	178	170	163	131	109	93	82	65	55	47	
	147	6800	358	307	269	253	239	226	215	205	195	187	179	143	120	102	90	72	60	51	
	166	6400	337	289	253	238	225	213	202	193	184	176	168	135	112	97	84	68	56	49	
	167	7200	379	325	284	268	253	239	227	217	207	198	190	152	127	108	95	76	64	54	
	20'-0"	102	2100	105	90	79	74	70	66	63	60	57	55	53	42	35	30				
		103	2730	137	117	102	96	91	86	82	78	75	71	68	55	46	39	34			
104		3340	167	143	125	118	111	105	100	95	91	87	84	67	56	48	42	33	.....	.....	
123		3060	153	131	115	108	102	97	92	88	84	80	77	61	51	44	38	31	.....	.....	
124		3830	192	164	144	135	128	121	115	109	104	100	96	77	64	55	48	38	32	.....	
125		4740	237	203	178	168	158	150	142	135	129	124	119	95	79	68	59	47	40	34	
126		5400	270	232	203	191	180	171	162	154	148	141	135	108	90	77	68	54	45	39	
145		5200	260	223	195	184	174	164	156	149	142	136	130	104	87	74	65	52	43	37	
146		6200	310	266	232	219	207	196	186	177	169	162	155	124	103	89	78	62	52	44	
147		6800	340	292	255	240	227	215	204	195	186	178	170	136	113	97	85	68	56	49	
166		6400	320	275	240	226	213	202	192	183	175	167	160	128	106	92	80	64	53	46	
167		7200	360	309	270	254	240	228	216	206	197	188	180	144	120	103	90	72	60	52	

For floor construction, joists should not be spaced over 24 in. o. c.

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"O-T" STEEL JOIST LOADING TABLE TABLE ONE (CONTINUED)

Clear Span	Joist Type	Total Safe Load Pounds	TOTAL SAFE LOADS IN POUNDS PER SQUARE FOOT FOR VARIOUS JOIST SPACINGS																	
			12"	14"	16"	17"	18"	19"	20"	21"	22"	23"	24"	30"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"	7'-0"
21'-0"	123	2920	139	119	104	98	93	88	83	79	76	73	70	56	46	40	35			
	124	3650	174	149	130	123	116	110	104	99	95	91	87	70	58	50	43	35	29	
	125	4510	215	184	161	152	143	136	129	123	117	112	107	86	72	61	54	43	36	31
	126	5400	257	220	193	182	172	162	154	147	140	134	129	103	86	73	64	52	43	37
	145	4950	236	202	177	166	157	149	142	135	129	123	118	94	79	67	59	47	39	34
	146	6200	295	253	222	209	197	187	177	169	161	154	148	118	99	84	74	59	49	42
	147	6800	324	277	243	229	216	205	194	185	177	169	162	129	108	93	81	65	54	46
	166	6400	305	261	229	215	203	193	183	174	166	159	153	122	102	87	77	61	51	44
	167	7200	343	294	257	242	229	217	206	196	187	179	172	137	115	98	86	69	58	49
22'-0"	123	2790	127	109	95	90	85	80	76	73	69	66	63	51	42	36	32			
	124	3480	158	136	119	112	105	100	95	91	86	83	79	63	53	45	40	32		
	125	4300	196	168	147	138	130	124	117	112	107	102	98	78	65	56	49	39	32	
	126	5300	241	207	181	170	161	152	145	138	132	126	121	97	80	69	60	48	40	34
	145	4730	215	185	162	152	144	136	129	123	117	112	108	86	72	61	54	43	36	31
	146	6200	282	242	212	199	188	178	169	161	154	147	141	111	94	80	70	56	47	40
	147	6800	309	265	232	218	206	195	185	177	168	161	154	123	103	88	77	62	52	44
	166	6400	291	250	218	206	194	184	175	166	159	152	146	116	97	83	73	58	48	42
	167	7200	327	280	245	231	218	206	196	187	178	171	164	131	109	93	82	65	54	47
23'-0"	123	2670	116	100	87	82	77	73	70	66	63	61	58	46	39	33	29			
	124	3330	145	124	109	102	97	92	87	83	79	76	72	58	48	41	36	29		
	125	4120	179	154	134	126	119	113	107	102	98	94	90	72	60	51	45	36	30	
	126	5060	221	189	165	155	147	139	132	126	120	115	110	88	74	63	55	44	37	31
	145	4520	197	169	147	139	131	124	118	112	107	103	98	79	66	56	49	39	33	28
	146	5940	258	221	194	182	172	163	155	147	141	135	129	103	86	74	65	52	43	37
	147	6800	296	254	222	209	197	187	178	169	161	154	148	118	99	84	74	59	49	42
	166	6400	278	238	209	197	186	176	167	159	152	145	139	111	93	80	70	56	46	40
	167	7200	313	268	235	221	209	198	188	179	171	163	157	125	104	90	79	62	53	45
24'-0"	123	2550	106	91	80	75	71	67	64	61	58	55	53	42	35	30				
	124	3190	133	114	100	94	89	84	80	76	73	69	67	53	44	38	33			
	125	3950	164	141	124	116	110	104	99	94	90	86	82	66	55	47	41	33		
	126	4860	202	174	152	143	135	128	121	116	110	105	101	81	68	58	51	41	34	
	145	4340	180	155	135	127	120	114	108	103	99	94	90	72	60	52	45	36	30	
	146	5690	237	203	178	168	158	150	142	135	129	124	119	95	79	68	59	47	40	34
	147	6800	283	242	212	200	189	179	170	162	155	148	142	113	94	81	71	57	47	41
	166	6400	267	228	200	188	178	168	160	152	145	139	133	107	89	76	67	53	44	38
	167	7200	300	257	225	212	200	190	180	171	164	157	150	120	100	85	75	60	50	43
25'-0"	145	4160	166	142	125	117	111	105	100	95	91	87	83	66	56	48	42	33		
	146	5450	218	187	163	154	145	137	131	125	119	114	109	87	73	62	55	44	36	31
	147	6560	262	225	197	185	175	166	157	150	143	137	131	105	88	75	66	53	44	38
	166	6180	247	212	186	175	165	156	148	141	135	129	124	99	82	71	62	49	41	35
	167	7200	288	247	216	204	192	182	173	165	157	150	144	115	96	82	72	58	48	41
26'-0"	145	4000	154	132	115	108	102	97	92	88	84	80	77	61	51	44	38	31		
	146	5250	202	173	152	143	135	128	121	115	110	105	101	81	67	58	51	40	34	
	147	6300	243	208	182	171	162	153	146	138	132	127	121	97	81	69	61	49	41	35
	166	5950	229	196	172	162	153	145	137	131	125	119	115	92	76	65	57	46	38	33
	167	7200	277	237	208	196	184	175	166	158	151	145	139	111	92	79	69	55	46	40
27'-0"	145	3850	143	122	107	101	95	90	86	82	78	75	71	57	48	41	36	29		
	146	5050	187	160	140	132	125	118	112	107	102	98	94	75	62	53	47	37	31	
	147	6070	225	193	169	159	150	142	135	129	123	117	112	90	75	64	56	45	37	32
	166	5730	212	182	159	150	141	134	127	121	116	111	106	85	71	61	53	43	35	30
	167	6940	257	220	193	181	171	162	154	147	140	134	128	103	86	74	64	51	43	37
28'-0"	145	3720	133	114	100	94	89	84	80	76	72	69	66	53	44	38	33			
	146	4880	174	149	131	123	116	110	105	100	95	91	87	70	58	50	44	35	29	
	147	5850	209	179	157	147	139	132	125	120	114	109	105	84	70	60	52	42	35	30
	166	5520	197	169	148	139	131	124	118	113	107	103	99	79	66	56	49	39	33	28
	167	6690	239	205	179	169	159	151	143	137	130	125	119	96	80	68	60	48	40	34
29'-0"	166	5340	184	158	138	130	123	116	111	105	100	96	92	74	61	53	46	37	31	
	167	6460	223	191	167	157	148	141	134	127	122	116	111	89	74	64	56	45	37	32
30'-0"	166	5150	172	147	129	121	114	109	103	98	94	90	86	69	57	49	43	34		
	167	6240	208	178	156	147	139	131	125	119	113	108	104	83	69	59	52	42	35	30
31'-0"	166	4990	161	138	121	114	107	102	97	92	88	84	81	64	54	46	40	32		
	167	6050	195	167	146	138	130	123	117	111	106	102	98	78	65	56	49	39	32	
32'-0"	166	4840	151	130	113	107	101	96	91	86	82	79	76	60	50	43	38	30		
	167	5860	183	157	137	129	122	116	110	105	100	96	92	73	61	52	46	37	31	

For floor construction, joists should not be spaced over 24 in. o. c.

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OPEN TRUSS NAILER JOISTS

TO make available for homes, apartments, stores and other light occupancy buildings the advantage of permanent construction at a cost comparable to wood has been the basic idea in the development of Nailer Joists.

In them are incorporated the basic features of Truscon "O-T" Open Truss Steel Joists, so extensively used in important buildings throughout the country. Unusual strength and rigidity result from their superior design and construction. Easy installation follows a complete and accurate fabrication in the Truscon plant.

Wide, specially formed members for top and bottom chords impart stiffness to the Nailer Joists and keep them true to line. The continuous steel web member is securely welded to the chords.

The end construction—a vital point in steel joist design—is unusually strong and rigid. Bearings for the joists are wide and ample. The underslung design at the supports not only insures stability of the joists during installation but provides additional head room under the supporting girders.

ADVANTAGES OF NAILER JOISTS

Truscon Nailer Joists reach the job ready for placing without cutting or fitting. The wood flooring is nailed directly to the wood nailing strips which are securely attached to the top chords of the joists.

The light weight of nailer joist construction lessens the time and labor required for erection and also saves materials in the supporting framework and foundations. Every detail of joists and attachments has been perfected by practical experience to simplify installation and assure dependable results.

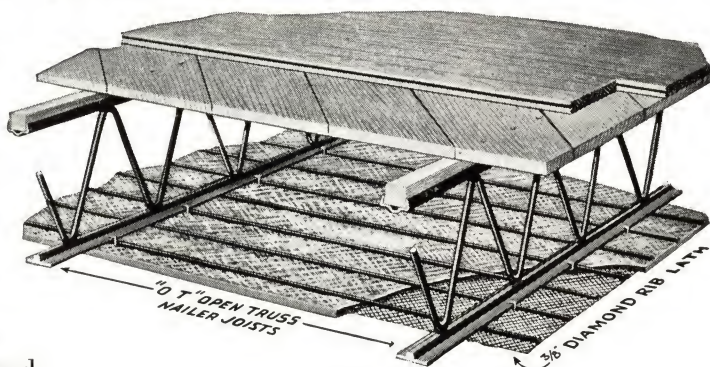
With a metal lath plastered ceiling attached to the lower chord of the joists, the construction provides fire-safety to a substantial degree, preventing the spread of fire from below.

General—Where Nailer Joist floor construction is specified, it is understood to mean Truscon "O-T" Nailer Joists of the size and spacing as shown on the drawings, together with a wooden floor over the joists and, unless otherwise specified, a metal lath and plaster ceiling directly beneath the joists.

The Nailer Joists shall be made of rolled steel shapes fabricated by high pressure electric automatic welding. The web member shall be a continuous plain round bar of constant diameter bent cold. The top chord shall be straight and the bottom chord bent up to form the bearing. The design and details of all members shall meet the requirements of the Steel Joist Institute Specifications. The wood nailer strip shall not be considered in determining the carrying capacity of the joist.

Nailer Strip—The wood nailer strip shall be treated with a moisture-proofing solution to prevent its absorption of moisture. It shall be held securely on top of the top chord by pressure embedment of the flanges of the top chord into its sides.

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Their open web permits the passage of pipes and conduits in any direction through the floor construction without requiring the cutting of joists or a suspended ceiling. Steel Joists eliminate the settlement due to shrinkage and consequent separation of base-board and floor, and its tendency to cause plaster cracking.



With Truscon Nailer Joists available it is no longer necessary, from either a practical or economical standpoint, to use wood joist construction in any building.

SPECIFICATIONS

Painting—All Nailer Joists shall be spray painted with one shop coat of good metal protective paint.

Bearing and Anchorage—Joists shall have a minimum bearing of 4 in. on concrete or masonry and 2½ in. on steel. Every third joist bearing on masonry walls shall be anchored. Joists parallel to walls shall have the top and bottom chords anchored at the line of the rows of bridging. Every joist bearing on structural steel beams shall be fastened by an anchor (or welding).

Bridging—As soon as joists have been erected and before the application of construction loads, joists shall be bridged with diagonal bridging. For spans up to 14 ft. 0 in. one row of bridging is required; two rows between 14 ft. 0 in. and 21 ft. 0 in.; and three rows over 21 ft. 0 in.

Ceilings—Where directly attached ceiling occurs, Bottom Chord Extensions shall be provided.

Note: The spacing of the Nailer Joists must not be more than the safe span of the flooring over the joists.

"O-T" NAILER JOIST LOADING TABLE TABLE TWO

The following table gives the TOTAL safe uniformly distributed load carrying capacities of Truscon "O-T" Open Truss Nailer Joists at various spacings.

The weight of DEAD loads must in all cases be deducted to determine the LIVE load carrying capacities of the joists.

Clear span	Joist type	Total safe load pounds	Total safe load in pounds per square foot for various joist spacings																	
			12"	14"	16"	17"	18"	19"	20"	21"	22"	23"	24"	30"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"	7'-0"
8'-0"	80W	3100	388	332	291	274	258	245	233	221	211	202	194	155	129	111	97	78	65	55
9'-0"	80W	3100	344	295	258	243	230	218	207	197	188	180	172	138	115	98	86	69	57	49
10'-0"	80W	3100	310	266	233	219	207	196	186	177	169	162	155	124	103	89	78	62	52	44
11'-0"	80W	2818	256	220	192	181	171	162	154	146	140	134	128	102	85	73	64	51	43	37
12'-0"	80W	2583	215	185	161	152	144	136	129	123	117	112	108	86	72	62	54	43	36	31
	100W	3111	259	222	194	183	173	164	156	148	141	135	130	104	86	74	65	52	43	37
	120W	4000	333	286	250	235	222	211	200	190	182	174	167	133	111	95	83	67	56	48
13'-0"	80W	2385	183	158	138	130	122	116	110	105	100	96	92	73	61	52	46	37	31	26
	100W	2872	221	190	166	156	147	140	133	126	121	115	110	88	74	63	55	44	37	32
	120W	3744	288	247	216	203	192	182	173	165	157	150	144	115	96	82	72	58	48	41
14'-0"	80W	2214	158	136	119	112	105	100	95	90	86	83	79	63	53	45	40	32	26	21
	100W	2667	190	163	143	135	127	120	114	109	104	99	95	76	64	54	48	38	32	26
	120W	3476	248	213	186	175	166	157	149	142	135	130	124	99	83	71	62	50	41	35
	121W	4600	329	282	246	232	219	208	197	188	179	171	164	131	110	94	82	66	55	47
15'-0"	80W	2067	138	118	103	97	92	87	83	79	75	72	69	55	46	39	34	26	21	17
	100W	2489	166	143	124	117	111	105	100	95	91	87	83	66	55	47	42	33	27	22
	120W	3244	216	185	162	153	144	137	130	124	118	113	108	87	72	62	54	43	36	31
	121W	4600	307	263	230	216	204	194	184	175	167	160	153	123	102	88	77	61	51	44
16'-0"	80W	1938	121	104	91	85	81	76	73	69	66	63	61	48	40	35	31	24	19	16
	100W	2333	146	125	109	103	97	92	87	83	80	76	73	58	49	42	37	29	23	19
	120W	3042	190	163	143	134	127	120	114	109	104	99	95	76	63	55	48	38	32	26
	121W	4600	288	246	216	203	192	182	173	164	157	150	144	115	96	82	72	58	48	41
17'-0"	100W	2196	129	111	97	91	86	81	77	74	71	68	65	52	43	37	32	24	19	16
	120W	2863	168	144	126	119	112	106	101	96	92	88	84	67	56	48	42	34	27	22
	121W	4600	271	232	203	191	180	171	163	155	148	141	135	108	90	77	68	54	45	39
	141W	4600	271	232	203	191	180	171	163	155	148	141	135	108	90	77	68	54	45	39
18'-0"	100W	2074	115	99	86	81	77	73	69	66	63	60	58	46	38	33	26	20	16	13
	120W	2704	150	129	113	106	100	95	90	86	82	78	75	60	50	43	38	30	24	19
	121W	4444	247	212	185	174	165	156	148	141	135	129	124	99	82	71	62	49	41	35
	141W	4600	296	220	192	180	171	162	154	146	139	133	128	102	85	73	64	51	43	37
161W	5481	305	261	228	215	203	192	183	174	166	159	152	122	102	87	76	61	51	44	38
	100W	1965	103	89	78	73	69	65	62	59	56	54	52	41	34	30	24	18	14	11
	120W	2561	135	116	101	95	90	85	81	77	74	70	67	54	45	39	34	26	20	16
	121W	4211	222	191	166	156	148	140	133	127	121	116	111	89	74	64	56	44	37	32
141W	4600	242	208	182	171	161	153	145	138	132	126	121	116	97	81	69	61	48	40	35
	161W	5193	273	234	205	193	182	173	164	156	149	143	137	109	91	78	68	55	46	39
	100W	1867	93	80	70	66	62	59	56	53	51	49	47	37	31	26	20	15	11	9
	120W	2433	122	105	91	86	81	77	73	70	67	64	61	49	41	35	30	23	18	14
121W	4000	200	171	150	141	133	126	120	114	109	104	100	96	80	67	57	50	40	33	27
	141W	4567	228	196	171	161	152	144	137	130	124	119	114	91	76	65	57	46	38	33
	161W	4933	247	212	185	174	165	156	148	141	135	129	123	99	82	70	62	49	41	35
	120W	2317	110	94	83	78	73	69	66	63	60	57	55	44	37	32	25	19	14	11
121W	3810	181	156	136	128	121	114	109	104	99	95	91	87	72	60	52	45	36	30	24
	141W	4349	207	177	155	146	138	131	124	118	113	108	104	83	69	59	52	41	35	30
	161W	4698	224	192	168	158	149	141	134	128	122	117	112	90	75	64	56	45	37	32
	120W	2212	101	86	75	71	67	64	60	57	55	52	50	40	34	28	22	17	13	10
121W	3636	165	142	124	117	110	104	99	94	90	86	83	83	66	55	47	41	33	27	22
	141W	4152	189	162	142	133	126	119	113	108	103	99	94	76	63	54	47	38	32	26
	161W	4485	204	175	153	144	136	129	122	117	111	106	102	82	68	58	51	41	34	28
	120W	2116	92	79	69	65	61	58	55	53	50	48	46	38	31	26	20	15	11	9
121W	3478	151	130	113	107	101	96	91	86	82	79	76	73	60	50	43	38	30	24	19
	141W	3971	173	148	130	122	115	109	104	99	94	90	86	69	58	49	43	35	28	22
	161W	4290	187	160	140	132	124	118	112	107	102	97	93	75	62	53	47	37	31	25
	120W	2028	85	72	63	60	56	53	51	48	46	44	42	34	28	22	17	13	10	8
121W	3333	139	119	104	98	93	88	83	79	76	73	70	67	56	46	40	35	27	21	16
	141W	3806	159	136	119	112	106	100	95	91	87	83	79	63	53	45	40	32	26	20
	161W	4111	171	147	128	121	114	108	103	98	93	89	86	69	57	49	43	34	28	22
	141W	3653	146	125	110	103	97	92	88	84	80	76	73	58	49	42	37	29	23	18
161W	3947	158	136	119	112	105	100	95	90	86	83	80	76	63	53	45	40	32	26	20
	141W	3513	135	116	101	95	90	85	81	77	74	71	68	54	45	39	34	27	21	16
161W	3795	146	125	110	103	97	92	88	83	80	76	73	58	49	42	37	29	23	18	14
	141W	3383	125	107	94	88	83	79	75	71	68	65	63	50	42	36	31	24	19	14
161W	3654	135	116	102	96	90	85	81	77	74	71	68	65	54	45	39	34	27	21	16
	141W	3262	117	100	88	82	78	74	70	67	64	61	58	47	39	33	28	21	16	12
161W	3524	126	108	95	89	84	80	76	72	69	66	63	63	50	42	36	31	24	19	14
	141W	3402	117	100	88	83	78	74	70	67	64	61	59	47	39	34	28	21	16	12
30'-0"	161W	3289	110	94	83	77	73	70	66	63	60	57	55	44	37	32	26	20	15	11
31'-0"	161W	3183	103	88	77	72	69	65	62	59	56	54	51	41	34	30	25	19	14	10
32'-0"	161W	3083	96	82	72</															

For floor construction, joists should not be spaced over 24 in. o. c.

"CLERESPAN" JOISTS

Truscon "Clerespan" Joists when employed in floor construction can be used advantageously in buildings for all types of occupancy regardless of their location. In many types of buildings their use will automatically eliminate all columns from the structure with the exception of those in the outer walls. Greater floor areas are thus provided without obstructing columns than has ever heretofore been accomplished. When used in roof construction "Clerespan" Joists meet every requirement of every type of building.

"Clerespan" Joists made of hot rolled structural steel shapes, are designed in accordance with standard engineering practice. Top chords are designed for bending between panel points as well as direct compression.

"Clerespan" Joists all have a camber built in them. They are fabricated by welding in a modern shop noted for its welding equipment and developments in automatic welding.

"Clerespan" Joists possess unusual lateral stiffness. This is due to the high radius of gyration about the vertical axis.

"Clerespan" accessories, such as anchors, lath clips, screed clips, bearing plates, etc., are similar to those used with open truss joists. Diagonal bracing or bridging is provided by hot-rolled angles. Lines of bracing are about 10 ft. apart.

Notes Regarding Table

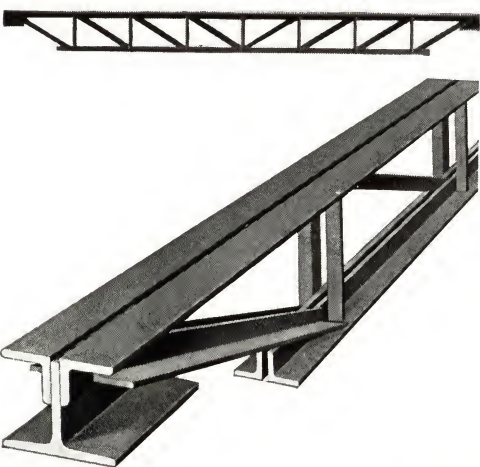
The weight of dead loads must in all cases be deducted to determine the live load carrying capacities which must be reduced for concentrated loads.

When holes are required in top or bottom chords the carrying capacities must be reduced in proportion to reduction of chord areas.

Figures printed in columns to right of heavy vertical line are for roof construction only.

Loads below horizontal zig-zag line are eliminated by end reaction.

The carrying capacities of "Clerespan" with top chords pitched, is determined by the nominal depth of the "Clerespan" Joists at the center of the span.



TOTAL SAFE UNIFORM LOAD TABLE

The following tables give the total safe uniformly distributed load carrying capacities of Truscon "Clerespan" Joists in pounds per lineal foot of span.

Joist Types	Weight Lbs./Ft.	Max. End Reaction	Clear Opening or Net Span															
			25'-0"	26'-0"	27'-0"	28'-0"	29'-0"	30'-0"	31'-0"	32'-0"	33'-0"	34'-0"	35'-0"	36'-0"				
18' Depths	181	11	3,775	302	285	269	252	236	221	208	196	184	174	165	156			
	182	12	4,213	337	320	298	277	259	242	226	212	200	188	178	168			
	183	13	4,700	376	356	337	319	302	283	265	248	234	220	208	196			
	184	15	5,625	450	422	392	364	340	317	297	278	262	247	233	220			
	185	17	6,113	489	462	437	414	392	366	343	322	303	285	269	254			
	186	19	6,966	557	536	516	480	448	418	392	368	346	326	307	291			
	187	21	7,279	582	560	539	520	502	470	442	415	391	369	349	330			
	188	23	7,635	611	587	566	545	527	509	478	449	423	399	377	357			
	189	25	8,144	650	626	603	582	561	542	525	509	479	452	426	404			
	1810	27	8,531	682	656	632	609	588	568	550	533	517	487	460	434			
1811	29	8,768	701	674	649	626	605	584	566	548	531	516	501	473				
1812	32	9,288	743	714	688	663	640	619	598	580	563	546	531	516				
20' Depths	201	11	3,625	250	238	226	215	203	192	182	172	163	155	148	141			
	202	12	4,031	278	267	253	237	223	210	198	187	177	168	160	152			
	203	13	4,510	311	296	282	269	257	246	232	219	208	197	187	178			
	204	15	5,409	373	354	332	312	293	276	261	246	233	221	210	199			
	205	17	5,858	404	385	367	350	334	319	301	284	269	255	242	230			
	206	19	7,091	489	464	439	412	387	365	344	325	308	292	277	264			
	207	21	7,560	521	504	479	456	433	409	387	366	347	330	314	299			
	208	23	7,984	550	532	515	499	471	444	420	398	377	358	340	324			
	209	25	8,517	587	568	549	532	516	501	474	449	426	404	385	366			
	2010	27	8,995	619	598	580	562	544	528	514	487	462	438	416	395			
2011	29	9,306	642	620	600	582	564	547	532	517	503	477	453	431				
2012	32	9,880	681	658	637	617	598	581	564	549	534	520	493	469				
2013	34	10,223	691	668	647	626	607	590	573	557	542	528	514	489				
2014	36	10,660	735	710	688	663	646	627	608	592	576	561	547	533				
22' Depths	221	11	3,498	212	203	194	186	178	169	161	154	147	140	134	128			
	222	12	3,911	237	227	218	207	196	186	176	168	160	152	145	139			
	223	13	4,340	263	252	242	232	223	214	206	196	187	178	170	162			
	224	15	5,214	316	302	288	273	258	245	233	221	210	200	191	183			
	225	17	5,643	342	328	315	302	290	279	268	255	242	231	220	210			
	226	19	6,848	415	396	379	360	341	323	307	292	278	265	252	241			
	227	21	7,442	451	431	412	394	378	361	344	327	312	298	285	272			
	228	23	8,481	514	486	460	436	414	393	374	356	340	324	310	296			
	229	25	8,855	537	521	506	484	464	443	421	401	383	365	349	334			
	2210	27	9,380	568	552	536	521	507	481	458	436	416	397	379	362			
2211	29	9,750	590	574	557	542	527	513	500	476	454	433	413	395				
2212	32	10,360	628	609	592	575	560	545	531	518	494	471	450	429				
2213	34	10,558	640	621	603	587	571	556	541	528	515	491	468	447				
2214	36	10,987	666	646	625	610	594	578	563	549	536	523	511	488				
24' Depths	242	12	3,774	204	197	190	183	175	167	159	152	145	139	133	128			
	243	13	4,200	227	219	211	203	196	189	183	176	170	162	156	149			
	244	15	5,069	274	263	253	242	233	220	209	200	191	183	176	168			
	245	17	5,458	295	284	274	264	255	246	238	229	220	211	202	194			
	246	19	6,642	359	345	331	318	305	290	277	264	253	242	232	222			
	247	21	7,215	390	374	360	346	333	321	309	296	283	271	260	250			
	248	23	8,288	448	427	406	387	369	353	337	322	309	296	284	272			
	249	25	8,862	479	460	442	426	409	394	379	363	347	333	320	307			
	2410	27	9,937	537	523	498	475	453	432	413	395	378	363	348	334			
	2411	29	10,360	560	545	531	518	494	471	450	431	413	395	379	364			
2412	32	10,773	582	567	552	539	526	513	490	469	449	430	413	396				
2413	34	11,073	598	583	568	554	540	527	515	492	470	450	431	413				
2414	36	11,543	624	608	592	577	563	550	537	525	513	491	470	451				
26' Depths	264	15	4,920	240	232	223	216	208	201	193	185	178	171	165	159			
	265	17	5,310	259	250	242	234	227	220	213	206	199	191	184	178			
	266	19	6,478	316	304	294	283	273	263	252	242	232	223	214	206			
	267	21	7,011	342	330	319	308	297	287	278	269	259	249	240	231			
	268	23	8,057	393	380	364	348	333	319	307	294	283	272	262	252			
	269	25	8,631	421	406	392	378	365	353	342	330	318	306	295	284			
	2610	27	9,984	487	466	445	426	408	392	376	361	347	334	321	309			
	2611	29	10,563	514	503	484	465	445	427	410	393	378	364	350	337			
	2612	32	11,000	537	524	512	500	483	465	446	428	411	396	381	367			
	2613	34	11,543	563	550	537	525	513	491	470	451	432	415	399	384			
2614	36	12,032	587	573	560	547	535	523	512	491	471	452	435	418				
28' Depths	284	15	4,815	214	207	200	194	187	182	175	169	162	156	151	145			
	285	17	5,153	229	223	216	210	204	198	190	184	177	171	165	160			
	286	19	6,323	281	272	263	254	247	239	232	223	214	206	199	192			
	287	21	6,840	304	294	285	276	268	259	252	244	237	230	222	215			
	288	23	7,875	350	338	326	315	303	292	281	271	261	252	243	235			
	289	25	8,415	374	362	351	340	329	319	310	300	291	283	273	264			
	2810	27	9,765	434	419	403	387	372	358	345	332	320	309	298	288			
	2811	29	10,463	465	449	434	420	405	390	376	362	349	337	325	314			
	2812	32	11,183	497	481	465	450	436	422	409	394	379	366	353	341			
	2813	34	12,190	542	530	509	488	468	449	432	416	400	385	371	358			
2814	36	12,495	555	543	532	521	510	489	470	452	436	420	404	390				
30' Depths	304	15	4,704	192	187	181	176	171	166	161	156	151	145	140	136			
	305	17	5,023	205	200	194	188	182	175	170	164	159	154	149	144			
	306	19	6,174	252	245	237	231	224	218	211	206	199	192	186	180			
	307	21	6,689	273	265	257	250	243	236	230	223	217	211	205	199			
	308	23	7,718	315	305	297	287	278	269	259	250	242	235	227	219			
	309	25	8,232	336	326	316	307	299	291	282	273	264	256	247	238			
	3010	27	9,555	390	378	367	354	341	329	318	307	297	287	278	269			
	3011	29	10,241	418	405	393	381	370	359	347	335	324	313	303	293			
	3012	32	10,952	447	433	420	408	396	385	374	363	352	340	329	319			
	3013	34	12,103	494	479	464	447	430	415	400	386	372	359	347	336			
3014	36	12,825	523	513	498	483	468	451	435	420	405	391	378	366				
32' Depths	328	23	7,553	285	277	270	263	255	249	241	233	226	219	212	206			
	329	25	8,056	304	296	288	280	273	266	257	252	244	236	229	223			
	3210	27	9,381	354	344	334	325	315	306	295	286	277	268	260	253			
	3211	29	10,044	379	368	358	348	339	330	321	311	302	293	284	275			
	3212	32	10,733	405	394	383	373	363	353	343	335	326	317	308	299			
	3213	34	11,819	446	433	422	410	398	385	372	360	348	337	326	316			
	3214	36	12,720	480	467	454	442	430	418	404	391	379	366	355	344			

PRESSED STEEL INSERTS

SLOTTED INSERTS

Truscon Slotted Inserts are attached to the forms and are completely embedded in the concrete construction. Only the narrow slot flush with the concrete is seen in the completed work. The bolt can be moved along this slot to any location, allowing wide variation in position. Truscon Slotted Inserts are used with equal success in ceilings, slabs, beams or columns. The anchors are integral with the insert and occur every 6 in. on each side.

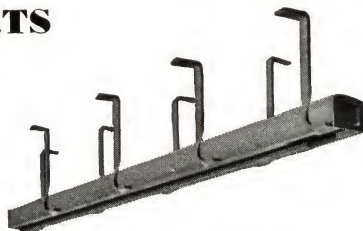
Standard lengths 12, 18, 24, 36, 48 and 60 in. Any desired length or run is obtained by removing end caps and butting the open ends together.



BRICK INSERTS

Truscon Brick Slotted Inserts have all the qualities and properties of Truscon Concrete Slotted Inserts.

The prongs are so bent that they provide positive anchorage of the insert to masonry. They are furnished in standard lengths of 12, 18, 24, 36, 48 and 60 in.



ADJUSTABLE INSERTS

Truscon Adjustable Inserts are made of pressed steel and have the same simple method of application to concrete and adjustment for bolts as the slotted inserts, but without their wide range of adjustability. Carry $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$ in. bolts.

TAPPED INSERTS

Truscon Tapped Inserts are made from pressed steel of highest quality, and furnished tapped for $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$ and $\frac{3}{4}$ in. bolts. Particularly adapted for work where arrangement has been determined before start of construction. Where required, this type of insert can be furnished tapped for $\frac{3}{8}$ or $\frac{1}{2}$ in. pipe.



CARRYING CAPACITIES

Since the supporting capacity of inserts is largely dependent on strength of the concrete and bolts, we cannot guarantee any particular loading. The following working loads have been determined by tests and give a factor of safety of at least four.

Inserts	For average good concrete
Slotted Inserts: 2000 lbs. per lin. ft.	
Adjustable Inserts: $\frac{1}{2}$ in. 300 lbs. per insert	
Adjustable Inserts: $\frac{5}{8}$ and $\frac{3}{4}$ in. 1300 lbs. per insert	
Tapped Inserts: All sizes 1500 lbs. per insert	

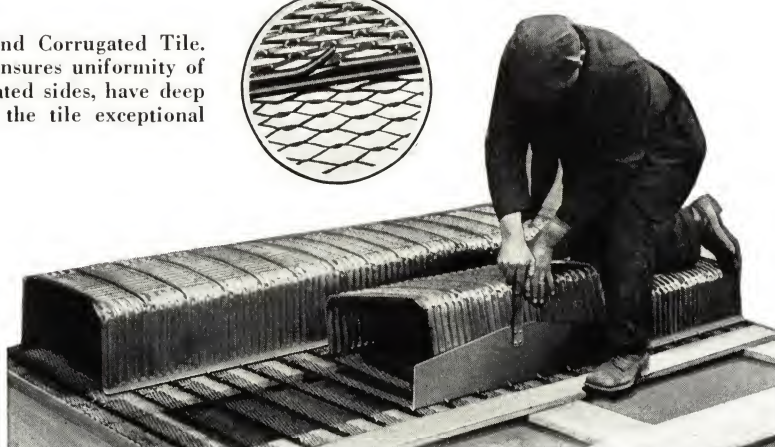
FLORETYPE CONSTRUCTION

PERMANENT STEEL TILE

Truscon Floretype are of two types—Ribbed Tile and Corrugated Tile. Both types are die formed in powerful presses, which insures uniformity of cross section. Ribbed tile in addition to having corrugated sides, have deep stiffening ribs across the top every 5 in. This gives the tile exceptional stiffness.

Properties of Floretype

	Ribbed Tile	Corrugated Tile
Stand. Depths.....	4, 6, 8, 10, 12 and 14 in.	4, 6, 8, 10, 12, 14 and 16 in.
Stand. Width at base.....	20 in.	20 in.
Special Widths.....	10 and 15 in.	12 and 16 in.
Stand. Length will lay.....	2 ft. 2 in.	2 ft. 10 in.
Half Length will lay.....	1 ft. 1 in.	1 ft. 4 in.
Tapered Tile Length.....	2 ft. 2 in.	2 ft. 10 in.
Width of Tapered Tile Narrow End.....	Nominally 16 in. but can be furnished any width or depth required	16 in.



LOCKTYPE LATH

Locktype Lath is a $\frac{3}{8}$ Diamond Ribbed Lath furnished by special fabrication in rolls 100 ft. 0 in. long and 24 in. wide. The lath is furnished in weights of 3.4 lbs. and 4.0 lbs. per sq. yd. in either black or copper bearing steel. The ribs of the lath are pronged to engage the flange of the Floretype.

Advantages of Permanent Tile

Saves in concrete due to stiffness of the pan.
Saves in placing costs, less weight per unit and removing of tile after pouring of concrete is eliminated.
Simplifies form work.
Saves in placing pipes and conduits.
Locktype construction is easily and speedily erected. The lath is rolled out on the forms, tacked in place, and the tile slipped into place by means of a special tool. The pressure of the wet concrete on the tile produces tension in the lath, resulting in a drum-like surface for a plaster base.

Advantages of Locktype Lath

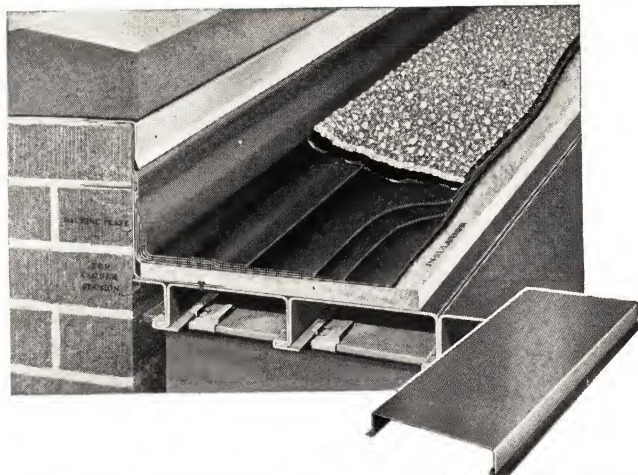
Insures uniform width of joists and positive attachment of ceiling to the structural slab.



Saves in placing ceiling lath.
Saves in plastering due to the rigid lath and drum-like surface provided.

STEELDECK ROOFS

STEELDECK Roofs, insulated to any degree and waterproofed, are of a broad and general usefulness. They are particularly adaptable to theatres, gymnasiums, schools, auditoriums, public halls and industrial buildings requiring large floor areas free from supports and obstructions. Steeldecks are plates of copper-bearing steel of standardized lengths and widths, with ribs formed longitudinally in the plates. The ribs are on the underside of the plates and the top is a smooth level surface to receive insulation and waterproofing. They can be used to advantage on straightway, flat, pitched and curved roofs with a minimum radius of 60 ft.



FERROBORD ROOF

The Ferrobord type of Truscon Steelrock is a roof so formed that each sheet firmly interlocks with the adjoining sheets to form a continuous deck over the entire roof.

Truscon Ferrobord is formed of 18 or 20 gauge copper bearing or electro-galvanized strip steel. Each sheet is 6 in. wide with vertical flanges along the sides.

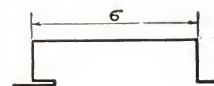
Ferrobord is applied directly to the roof supporting steel and is securely fastened to the structural members either by clipping or by welding each vertical rib to the purlins.

Abutting ends of sheets are securely joined and stiffened by a butt joint clip, presenting a smooth surface to which the insulation and built-up roofing are applied.

Ferrobord is adaptable to flat or pitched roofs or curved roofs, having a minimum radius of 60 ft.

The fabricated sheets receive a shop coat of gray paint.

Curving Ferrobord — Ferrobord may be curved to minimum radius of 60 ft. 0 in. in the shop or 115 ft. 0 in. in the field.



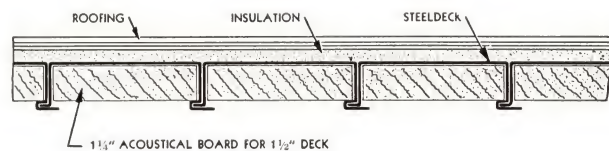
STEELDECK FERROBORD

Gauge	Dimens., in.		Mom. of Inertia per ft. width	Sec. Modulus per ft. width	Table of Safe Loads in Lbs. per Sq. Ft.*													
	Depth	Width			4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	
18	1¼	6	.190	.205	155	120	100	85	70	60	50	45	40	35	25	.....	.....	
20	1¼	6	.148	.160	120	95	80	65	55	47	40	35	30	25	.....	.....	.....	
18	1½	6	.294	.268	250	195	160	130	110	95	80	70	60	50	45	.....	.....	
20	1½	6	.228	.208	150	120	100	80	70	55	50	40	35	30	.....	.....	.....	
18	1¾	6	.425	.337	260	205	165	135	115	100	85	75	65	55	50	45	40	
20	1¾	6	.329	.261	200	160	130	105	90	75	65	55	50	45	40	35	30	

*Loads shown in above table include 5.0 lbs. dead load for deck plates, insulation and roofing.

FERROCOUSTIC ROOFDECKS

Ferrocoustic Roofdecks provide all the advantages of Steeldeck with the additional feature of acoustical correction for auditoriums, large rooms, gymnasiums and similar places.



FERROBORD, 6 in. wide, with acoustical treatment, consists of panels of any commercial acoustical board fitted between the ribs of these roofdecks. The flanges of the ribs form a positive mechanical support. These ribs are 1¼, 1½ and 1¾ in. deep, allowing 1, 1¼ and 1½ in. of acoustical treatment to be used. Sheets with acoustical board inserted are welded to purlins, eliminating metal clips and adding strength to the construction.

The Ferrobord construction with the Ferrocoustic treatment also makes an excellent, light-weight, quiet floor construction of minimum thickness when surfaced with cement, magnesite, rubber tile, linoleum or other materials, for its structural design enables it to carry unusually heavy loads.

TRUSCON

EXECUTIVE OFFICES AND MAIN PLANT, YOUNGSTOWN, OHIO

FACTORIES: CLEVELAND, OHIO • LOS ANGELES, CAL. • WALKERVILLE, ONT.

PRESSED STEEL DIVISION, 6100 TRUSCON AVENUE, CLEVELAND, OHIO

FOREIGN TRADE DEPARTMENT, 155 E. 44th STREET, NEW YORK, N. Y.

TRUSCON ENGINEERING AND SALES OFFICES

ALBANY, N. Y., 75 State Street
ALBUQUERQUE, N. M., P. O. Box 515
ALTOONA, PA., 6 Log Cabin Court
ATLANTA, GA., 610 Rhodes-Haverty Building

BALTIMORE, MD., 330 W. 24th Street
BIRMINGHAM, ALA., 1105 Martin Building
BOSTON, MASS., 38 Chauncy Street
BUFFALO, N. Y., 402 Sidway Building

CARLESTON, W. VA., 501 Virginian Land Bank Building
CHATTANOOGA, TENN., 901-2 James Building
CHICAGO, ILL., 201 No. Wells Street
CINCINNATI, OHIO, 1026 Dixie Terminal Building
CLEVELAND, OHIO, 1505 Builders' Exchange Building
COLUMBUS, OHIO, 1000-04 Atlas Building

DALLAS, TEXAS, 415 Construction Building
DAYTON, OHIO, 30 So. Ludlow Street
DENVER, COLO., 820 12th Street
DES MOINES, IOWA, Hubbell Building
DETROIT, MICH., 615 Wayne Street

ERIE, PA., 309 Schenley Drive

FORT WAYNE, IND., 302 Old First Bank Building

GREENSBORO, N. C., 935 Jefferson Standard Building

HARRISBURG, PA., 600 No. Second Street
HOUSTON, TEXAS, 823 A. M. & M. Building

INDIANAPOLIS, IND., 805 Union Title Building

JACKSONVILLE, FLA., 504-6 Hildebrandt Building

KANSAS CITY, MO., 1009 Baltimore Avenue
KNOXVILLE, TENN., 705 General Building

LITTLE ROCK, ARK., 5224 U Street
LOS ANGELES, CALIF., 5480 E. Slauson Avenue
LOUISVILLE, KY., 622 So. Fifth Street

MEMPHIS, TENN., 586 Shrine Building
MIAMI, FLA., 1333 No. Bayshore Drive
MILWAUKEE, WIS., 6111 Plankinton Building
MINNEAPOLIS, MINN., 738 Baker Building

NASHVILLE, TENN., 801 Nashville Trust Building
NEWARK, N. J., 605 Broad Street
NEW HAVEN, CONN., 42 Church Street
NEW ORLEANS, LA., 1143 Canal Bank Building
NEW YORK, N. Y., 155 E. 44th Street
NORFOLK, VA., 22nd and Manteo Streets

OKLAHOMA CITY, OKLA., 1 Northwest First Street
OMAHA, NEB., 851 Insurance Building

PEORIA, ILL., 306 Lehman Building
PHILADELPHIA, PA., 906 Architects Building
PHOENIX, ARIZ., 222 Luhrs Building
PITTSBURGH, PA., 2544 Oliver Building
PORTLAND, ORE., 2139 No. Kerby Avenue

RICHMOND, VA., 222 E. Broad Street

ST. LOUIS, MO., 1005 St. Louis Mart Building
SALT LAKE CITY, UTAH, 1526 So. West Temple Street
SAN ANTONIO, TEX., 909 Builder's Exchange Building
SAN FRANCISCO, CALIF., 604 Mission Street
SCRANTON, PA., 203 Colfax Avenue
SEATTLE, WASH., 217 Lloyd Building
SYRACUSE, N. Y., 612 Gurney Building

TAMPA, FLA., P. O. Box 1512
TOLEDO, OHIO, 314 Commerce Guardian Bank Building
WASHINGTON, D. C., 700 Investment Building

TRUSCON WAREHOUSES

BIRMINGHAM, ALA.
BOSTON, MASS.
BUFFALO, N. Y.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
DALLAS, TEXAS
DETROIT, MICH.
HARRISON, N. J.

INDIANAPOLIS, IND.
JACKSONVILLE, FLA.
KANSAS CITY, MO.
LONG ISLAND CITY, N. Y.
LOS ANGELES, CALIF.
MILWAUKEE, WIS.
NORFOLK, VA.
OKLAHOMA CITY, OKLA.

OMAHA, NEB.
PHILADELPHIA, PA.
PITTSBURGH, PA.
PORTLAND, ORE.
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YOUNGSTOWN, OHIO